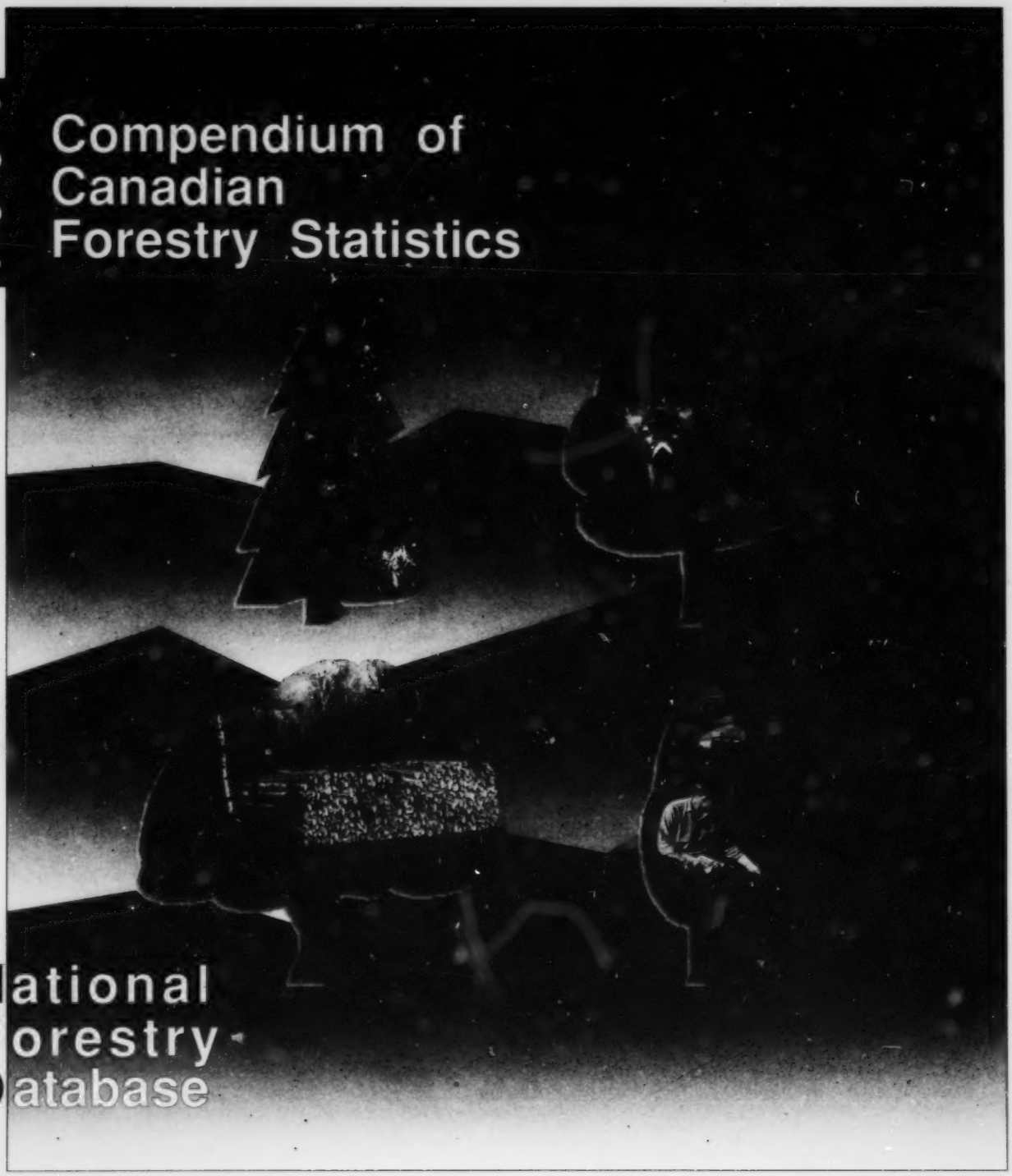
1991

Compendium of Canadian Forestry Statistics



National Forestry Database

Canadian Council of Forest Ministers

Conseil canadien des ministres des forêts

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Errata

The following pages are erroneous. Please correct the following figures:

Table 3.1	**Newfoundland**		
Page 30	A. Provincial Crown land	Error	Correction
	Total - provincial Crown land		
	Softwoods	816*	2 362*
	Hardwoods	109	109
	Total	925*	2 471*
Page 31	B. Private land		
	Total - private land		
	Softwoods	1 833*	288*
	Hardwoods	23*	23*
	Total	1 856*	311*
Table 5.3	**Canada**		
Page 75	C. Direct - public funding		
	Protection	117 380	374 159
Table 5.5	**Canada**		
Page 81	A. Public - direct		
	Total funding	117 380	374 159

Compendium of Canadian Forestry Statistics 1991

National Forestry Database

Canadian Council of Forest Ministers
Ottawa, 1992

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FOREWORD

The Canadian forest sector and Canada's forest resource are vitally important to Canada, both in terms of their contribution to the national economy and to the environmental, cultural, and social fabric of the country. The management of the forest economy, the issues, the problems, and the potential opportunities are of great importance to Canadians. Canadians want relevant, timely, and authoritative information about the state of their national resource. It is incumbent upon governments and industry to make available information that provides them with a clear and objective view of the issues and options they face in dealing with forest resource matters.

The Canadian Council of Forest Ministers (CCFM) is committed to developing and maintaining a comprehensive national forestry database. Forestry Canada has responsibility for the design, construction, and management of the data sets that constitute the national forestry database. Overall direction of the program is provided by the National Forestry Database Program Steering Committee, which includes representatives of the provincial and territorial forest management agencies as well as Forestry Canada. The committee reports to the CCFM through the deputy ministers responsible for forestry.

The database is structured to permit a description of the level of activity in any period, and to mark change in activity and in the resource itself. Activity data are provided to the database managers each year by the provincial and territorial forestry agencies. Data for federal forest lands are collected by Forestry Canada from the various federal agencies responsible for their management. Forest inventory data are compiled every five years.

This compendium of statistics from the database is the first of an annual series. Data are presented in tabular and graphic form. The intent of this publication is to develop time series for each of the themes presented on the following pages. The program is working to improve the consistency and comparability of the data in the national forestry database. It is also working to expand its coverage to include non-timber values.

National Forestry Database Program
Forestry Canada
Ottawa, Ontario
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CONVERSION FACTORS

All units of measure in this publication are shown in metric only. The following table shows the factors used in converting from metric measure to imperial.

Description	Metric measure	Approximate conversion factor (multiply by)	Imperial (English) measure
Bolts	m^3	0.415	cord
Forest area	ha (0.01 km^2)	2.47	acre
Logs	m^3	0.221	MBF (thousand board feet)
Maple syrup	litre	0.22	gallon
Maple syrup	kilogram	2.21	pound
Pulpwood	m^3	0.415	cord
Roundwood	m^3	35.3	cubic foot

UTILIZATION FACTORS

Utilization specifications vary from province to province and within provinces. The specifications used are appropriate for local industrial practices at the time of the source inventory. Volumes are normally expressed as gross or net merchantable volume, but the latter is preferred in this publication.

The maturity or operability of the stand is not taken into consideration. For example, an immature stand may include trees of sawwood size, in which case a sawwood volume is reported.

Gross merchantable volume: Volume of the main stem, excluding stump and top but including defective and decayed wood; applies to trees or stands.

Net merchantable volume: Volume of the main stem, excluding stump and top as well as defective and decayed wood; applies to trees or stands.

KEY TO SYMBOLS

The standard symbols used by Statistics Canada have been adopted for use in this manual. They are as follows:

...	figures not appropriate or not applicable
..	figures not available
-	nil or zero
--	amount too small to be expressed
p	preliminary figures
r	revised figures
e	estimated

METHODOLOGY

The National Forestry Database is at the developmental stage and some provinces are able to provide only a portion of the data requested. Pre-established rules have been devised to maximize the number of meaningful totals that can be published.

Rules used to calculate **totals for Canada** (horizontal)

Totals for Canada depend on the availability of data at the provincial level. Some figures that are not available (..) and are known to be very small are considered equal to zero (0 or -), whereas others known to be large prevent the calculation of totals for Canada.

Rules used to calculate **"Provincial and private lands"** and **"Total - all ownerships"** (vertical)

In most cases, data for provincial Crown land are available whereas data for private land and federal land are often missing.

- Provincial and private lands

  Some figures that are not available (..) for private land and are known to be very small are considered equal to zero (0 or -), whereas others known to be large prevent the calculation of a total for "Provincial and private lands."

- Total - all ownerships

  If the total for "Provincial and private lands" is not available, "Total - all ownerships" is automatically not available. If the total for "Provincial and private lands" is available but the total for "Federal land" is not available, then "Total - all ownerships" is equal to "Provincial and private lands."

GRAPHICS

The publication is intended primarily for communication purposes, with the format designed to facilitate duplication of the graphics into either overhead transparencies or slides.

GENERAL COMMENTS

- Newfoundland refers to Newfoundland and Labrador, unless otherwise specified.
- After consultation with representatives of the Northwest Territories and Yukon, the data for the territories were reported under the ownership "Provincial Crown land," unless otherwise specified.
- Totals may not add up due to rounding.

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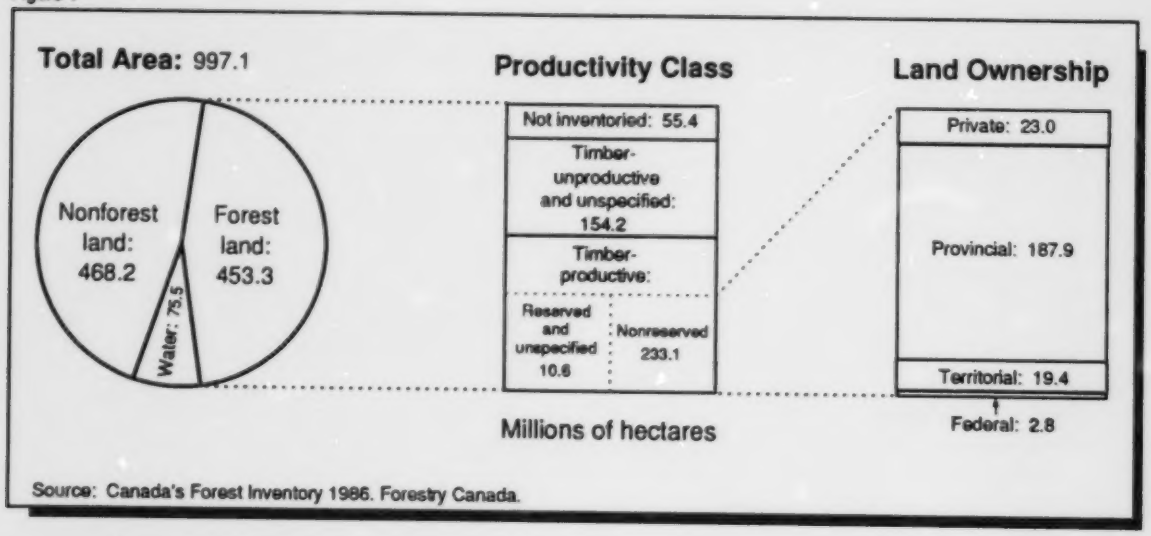
BACKGROUND. FOREST INVENTORY

Through the Canadian Forest Inventory Committee, Forestry Canada works in close cooperation with provincial and territorial forest management agencies, to make recommendations on forest inventory procedures and to acquire data for national area and volume summaries on topics such as ownership, status, productivity, site quality, stocking, disturbance, age, forest types, and species groups. The federal ENFOR program, in cooperation with Forestry Canada and provincial forestry agencies, completed the inventory of Forest Biomass to add information on above-ground forest biomass to the wood volume estimates. The forest inventories are available from the Canadian Forest Resource Data System.

Figure 1



Source: Canada's Forest Inventory 1986. Forestry Canada.

TERMINOLOGY

PRODUCTIVITY CLASS

Forest land is defined as land primarily intended for growing, or currently supporting, forest. Includes land not now forested, e.g., clearcuts; northern lands that are forested but not classified for any use as timber; and plantations. (5)

Timber-productive forest land	Forest land that is capable of producing a merchantable stand within a reasonable length of time. (5)
Timber-unproductive forest land	Forest land that is incapable of producing a merchantable stand within a reasonable length of time. (5)

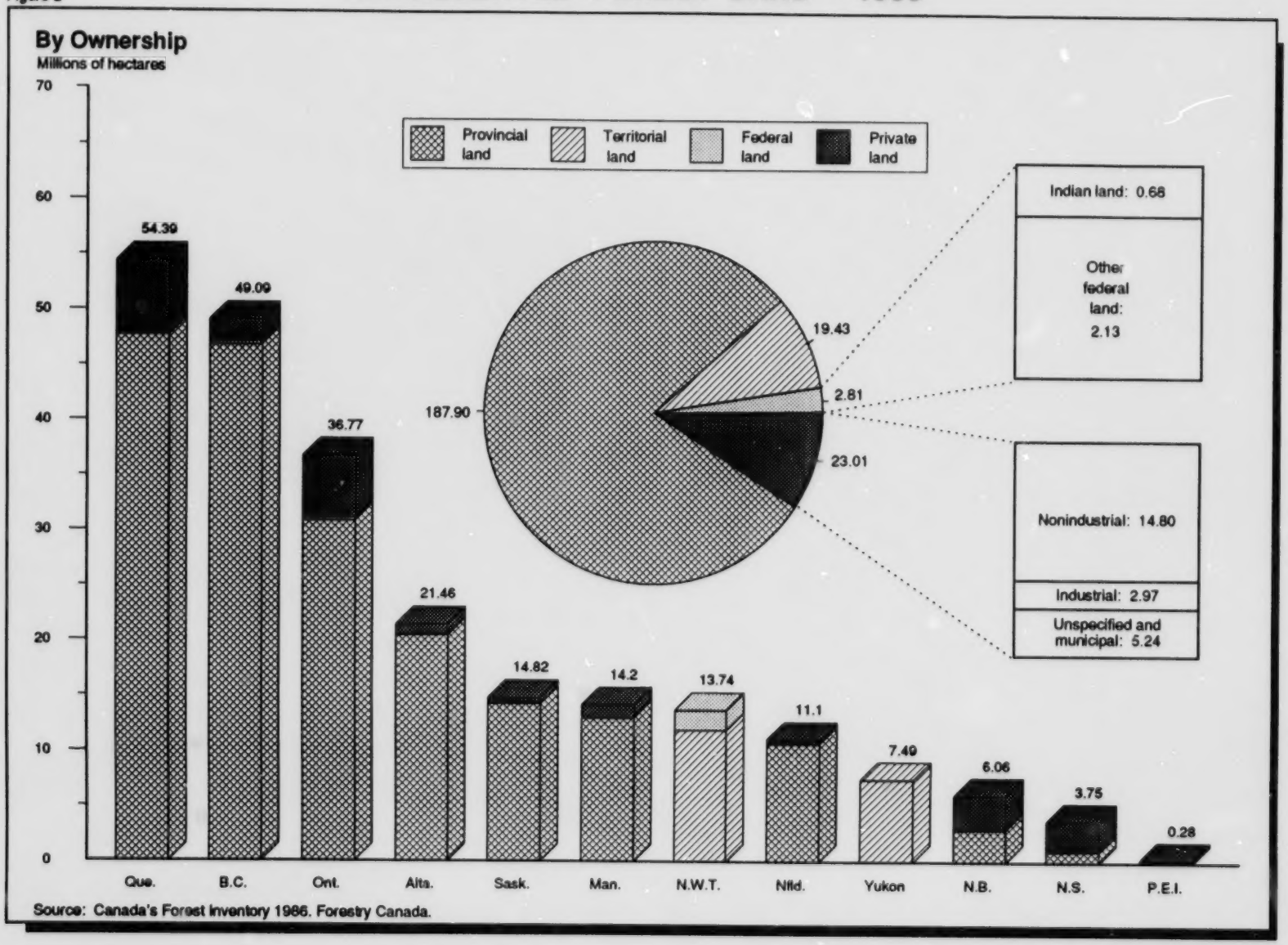
OWNERSHIP/TENURE

The holding, particularly as to manner or term, of a property where the responsibility for forest management rests with the forest owner. (2)
Legislation defines a number of forestry tenures by which the cutting of timber and other user rights to Crown land are assigned.

PROVINCIAL CROWN LAND	**Long-term licence**	Public lands held under a long-term licence such as Forest Management Agreement (FMA), Tree Farm Licence (TFL), Timber Supply and Forest Management Agreement (TSFMA), or equivalent. (3)
	Other tenure	Public lands, other than those under long-term licence, held under a variety of tenure arrangements or volume allotments; for example, unregulated tenure (timber licence, timber berth) in British Columbia. (3)
PRIVATE LAND	**Industrial land**	Land owned by a large corporate industry for commercial forestry purposes. (2)
	Nonindustrial land	Land owned by corporations or individuals that may or may not be used for commercial forestry purposes. (2) These corporations may include churches, municipalities, villages, townships, companies, limited partnerships, organizations, and associations.
FEDERAL LAND	**Indian land**	Lands within Indian reserves or Indian settlements. (2)
	National parks	
	Other federal land	Other Crown land within the jurisdiction of the federal government. Includes lands held by National Defense, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transportation, and Crown Corporations. (2)

INVENTORIED TIMBER-PRODUCTIVE NONRESERVED FOREST LAND - 1986

Figure 2



1 Area Classification by Productivity Class, Ownership, and Province/Territory, 1986

(Thousands of hectares)

Productivity class	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.[a]	Canada[b]
A. Total area	40 570	570	5 550	7 340	154 070	106 860	65 000	65 230	66 120	94 780	48 350	342 630	**997 060**
B. Forest land	22 478	295	4 037	6 336	94 000	80 700	34 920	23 708	37 746	60 307	27 369	61 436	**453 320**
C. Inventoried forest land	22 478	295	4 037	6 336	82 486	46 603	25 120	23 708	37 746	60 307	27 369	61 436	**397 920**
D. Inventoried timber-productive nonreserved forest land	11 104	278	3 749	6 065	54 390	36 769	14 193	14 820	21 462	49 087	7 489	13 737	**233 146**
Provincial land	10 699	19	1 023	2 958	47 701	30 865	13 005	14 294	20 491	46 844	-	-	**187 900**
Territorial[a]	-	-	-	-	-	-	-	-	-	-	7 489	11 941	**19 430**
Private land	401	257	2 710	2 983	6 607	5 650	1 089	389	939	1 979	-	-	**23 006**
Private-industrial	349	-	844	565	422	786	-	-	-	-	-	-	**2 966**
Private-nonindustrial	48	257	1 866	973	3 635	4 865	990	203	-	1 962	-	-	**14 799**
Private-unspecified and municipal	4	-	-	1 444	2 550	-	100	186	939	17	-	-	**5 241**
Total provincial/ territorial and private lands	11 100	277	3 733	5 941	54 308	36 515	14 094	14 683	21 430	48 823	7 489	11 941	**230 336**
Federal land[c]	4	2	16	124	82	254	99	137	31	265	-	1 797	**2 810**
Indian land	-	1	11	13	63	126	95	137	31	201	-	-	**679**
Other federal land[d]	4	1	5	111	19	128	4	-	-	64	-	1 797	**2 131**

[a] In this context, the Northwest Territories are classified partly as territorial land and partly as federal land.

[b] 1 hectare (ha) = 10,000 m^2, 1 km^2 = 100 ha, 1 ha = 2.470 966 acres.

[c] Not all federal lands are included, partly because some federal properties are outside the inventoried areas of the national inventory, and partly because provincial inventories (which are the source for the national inventory) often do not extend their coverage onto federal lands.

[d] Other federal land includes land held by National Defence, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transport Canada and other. National parks are excluded.

Source: Canada's Forest Inventory 1986. Forestry Canada.

SECTION 1. ALLOWABLE ANNUAL CUT

The allowable annual cut (AAC) is the volume of wood that may be harvested, under management, for a given period.

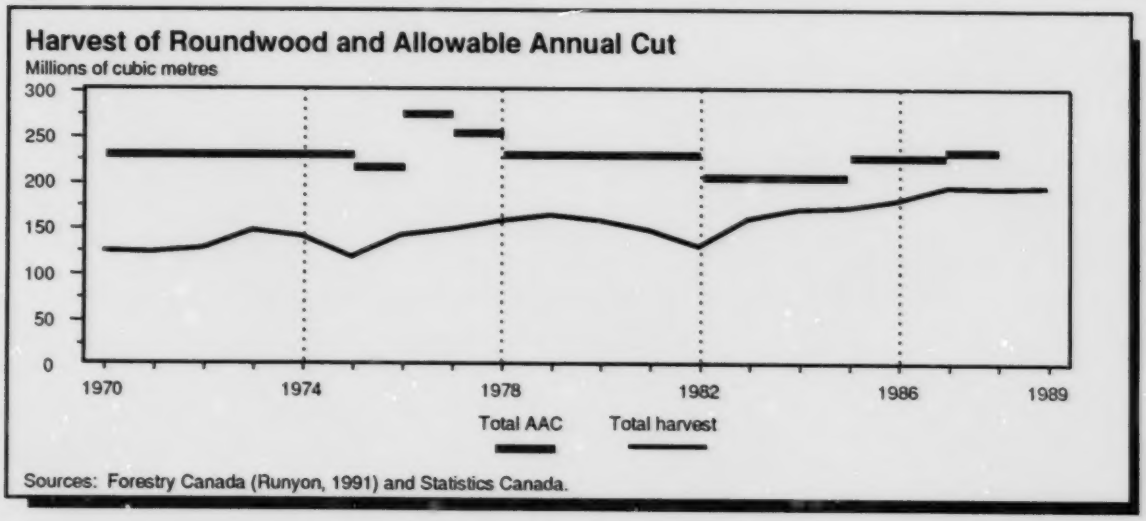
The estimates of AAC for provincial Crown land usually represent an aggregation of AACs derived for each forest management unit, forest management agreement, tree farm licence, etc., in each province. The term Productive Forest Area (PFA) is defined for each province and territory. The levels of forest management are defined below:

EXTENSIVE
- **Current protection from fires and insects; natural regeneration only**

BASIC
- **Extensive management plus artificial regeneration where necessary**

INTENSIVE
- **Basic management plus stand improvement of juvenile stands plus acceleration of artificial regeneration**

Figure 3



TERMINOLOGY

OWNERSHIP/TENURE

The holding, particularly as to manner or term, of a property where the responsibility for forest management rests with the forest owner. (2)
Legislation defines a number of forestry tenures by which the cutting of timber and other user rights to Crown land are assigned.

PROVINCIAL CROWN LAND	**Long-term licence**	Public lands held under a long-term licence such as Forest Management Agreement (FMA), Tree Farm Licence (TFL), Timber Supply and Forest Management Agreement (TSFMA), or equivalent. (3)
	Other tenure	Public lands, other than those under long-term licence, held under a variety of tenure arrangements or volume allotments; for example, unregulated tenure (timber licence, timber berth) in British Columbia. (3)
PRIVATE LAND	**Industrial land**	Land owned by a large corporate industry for commercial forestry purposes. (2)
	Nonindustrial land	Land owned by corporations or individuals that may or may not be used for commercial forestry purposes. (2) These corporations may include churches, municipalities, villages, townships, companies, limited partnerships, organizations, and associations.
FEDERAL LAND	**Indian land**	Lands within Indian reserves or Indian settlements. (2)
	National parks	
	Other federal land	Other Crown land within the jurisdiction of the federal government. Includes lands held by National Defense, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transportation, and Crown Corporations. (2)

1.1 Provincial and Territorial Allowable Annual Cut (AAC), Estimates and Summary of Factors, by Ownership and Species Group for the Latest Period Calculated

Newfoundland and Labrador

Provincial and private lands				Federal land			
Latest period calculated	1990				1990		
Unit of measure	Net merchantable volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	1 175 000	..	1 175 000	Indian land	...	...	...
Private land - industrial	1 835 000	..	1 835 000	National parks	-	-	-
- nonindustrial	..	..	..				
- total	1 835 000	..	1 835 000	Other federal land	..	..	6 600
Total	**3 010 000**	**..**	**3 010 000**	**Total**	**..**	**..**	**6 600**

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as forest area capable of producing 35 m^3/ha or more at rotation.
- 60% of the provincial Crown land PFA and 65% of the industrial private land PFA are considered operable to support the AAC.
- Fire is expected to cause 1% damage annually to each tenure.
- Other agents are expected to cause 1% damage annually to each tenure.
- The expected loss in harvest yield due to product specification or logging technology is 3.5% for each tenure.
- The expected loss in harvest yield due to other agents is 25% for each tenure.
- The AAC includes yield benefits from tree improvement programs.

Prince Edward Island

Provincial and private lands				Federal land			
Latest period calculated	1987-2087				1990		
Unit of measure	Gross merchantable volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	25 300	12 900	38 200	Indian land	..	..	1 100
Private land - industrial	...	...	...	National parks	-	-	-
- nonindustrial	385 000	322 000	707 000				
- total	385 000	322 000	707 000	Other federal land	...	...	...
Total	**410 300**	**334 900**	**745 200**	**Total**	**..**	**..**	**1 100**

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as all land supporting a crop of trees or areas that recently supported a crop of trees.
- 100% of the PFA is considered operable to support the AAC.
- Plantation establishment is expected to remain at 900 ha per year, with thinning at an average of 600 ha per year.
- Fires are not a serious threat to the forest of P.E.I.
- The effects of insects and diseases are reflected in the volume/age relationships used in the projections.

1.1 Provincial and Territorial Allowable Annual Cut (continued)

Nova Scotia

Provincial and private lands				Federal land			
Latest period calculated	1991-1995				1990		
Unit of measure	Solid volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	850 000	500 000	1 350 000	Indian land	..	..	14 800
Private land - industrial	1 100 000	350 000	1 450 000	National parks	-	-	-
- nonindustrial	1 800 000	650 000	2 450 000				
- total	2 900 000	1 000 000	3 900 000	Other federal land	..	..	10 100
Total	**3 750 000**	**1 500 000**	**5 250 000**	**Total**	..	..	**24 900**

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as all areas that are forested or are regenerating to forest, excluding sugar woods and Christmas tree production areas.
- 86% of the provincial Crown land PFA, 86% of the industrial private land PFA, and 66% of the nonindustrial private land PFA are considered operable to support the AAC.
- Deductions are made from the PFA for greenbelts (5% for each tenure) and for inaccessible and protected sites (10% for each tenure).
- A deduction is made from the nonindustrial private land PFA (25%) for non-participation in commercial activity.
- Cull and waste are expected to reduce yield by 8% for each tenure.
- Abnormal losses to insects, diseases, fire, and blowdown are expected to reduce yield by 5% for each tenure.
- The AAC is based on the expectation of intensive forest management, including yield benefits from tree improvement programs.

New Brunswick

Provincial and private lands				Federal land			
Latest period calculated	1987-1992				1990		
Unit of measure	Net merchantable volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	4 330 615	1 839 360	6 169 975	Indian land	..	..	30 000
Private land - industrial	1 785 100	690 040	2 475 140	National parks	-	-	-
- nonindustrial	1 809 130	1 412 000	3 221 130				
- total	3 594 230	2 102 040	5 696 270	Other federal land	..	..	156 000
Total	**7 924 845**	**3 941 400**	**11 866 245**	**Total**	..	..	**186 000**

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as forest land that is capable of producing a merchantable stand within a reasonable amount of time.
- 92% of the provincial Crown land PFA is considered operable to support the AAC, after the following deductions:
  - 7% for land use restrictions;
  - 1% due to economic or access factors.
- 98% of the private land PFA is considered operable to support the AAC, after 2% deduction for land use restrictions in each of the industrial and nonindustrial private land tenures.
- The AAC is based on the expectation of intensive forest management on provincial Crown and industrial private lands. Extensive forest management is expected on nonindustrial private lands.
- New guidelines for a management plan update (1993-1997) will further reduce the percentage of PFA considered operable to support the AAC.

1.1 Provincial and Territorial Allowable Annual Cut (continued)

Quebec

Provincial and private lands				Federal land			
Latest period calculated Unit of measure	1988-1990 Net merchantable volume (m^3)				1990 Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	29 354 000	11 036 000	40 390 000	Indian land	..	..	390 000
Private land - industrial	-	-	-	National parks	-	-	-
- nonindustrial	4 736 000	7 827 000	12 563 000				
- total	4 736 000	7 827 000	12 563 000	Other federal land	..	..	150 000
Total	**34 090 000**	**18 863 000**	**52 953 000**	**Total**	..	..	**540 000**

Summary of factors in AAC determination

- Productive forest area (PFA) does not include water, nonforest lands, timber-unproductive lands, and inaccessible timber-productive forest lands (with slopes in excess of 50%).
- 52% of the provincial Crown land accessible and PFA is considered operable to support the AAC, after the following deductions:
  - 13% for ecological reserves, parks, recreational areas, agricultural land, and other uses;
  - 27% due to economic or access factors;
  - 8% for other factors.
- The AAC on provincial Crown land is based on the expectation of basic forest management, including yield benefits from tree improvement programs.
- 94% of the nonindustrial private land PFA is considered operable to support the AAC, with 6% deducted for agriculture and other uses.
- Between 2% and 5% (average 3.5%) PFA is expected to be lost to product specification or logging technology.

1.1 Provincial and Territorial Allowable Annual Cut (continued)

Ontario

Provincial and private lands				Federal land			
Latest period calculated	1990				1990		
Unit of measure	Area (ha)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	256 581	181 075	437 656	Indian land	..	..	1 000 000
Private land - industrial	..	..	..	National parks	-	-	-
- nonindustrial	..	..	..				
- total	..	..	..	Other federal land	..	..	90 000
Total	..	..	..	**Total**	..	..	**1 090 000**

Summary of factors in calculation of the maximum allowable depletion (MAD)

- Productive forest area (PFA) is the area of "productive forest" that has been inventoried according to Ontario's forest resources inventory system.
- The maximum allowable depletion (MAD) is the calculated area from which timber may be depleted over the 5-year term of a timber management plan by any means, including harvest, fire, insects, disease, or allocation of the area to other uses to fulfill the objectives of management. All areas that do not contribute to the MAD are discounted before the calculation is made.
- 68.2% of the PFA is considered operable to support the MAD (or AAC), after the following deductions:
  - 14.8% for private lands (MAD is not calculated for private lands, as their management is not mandatory under the Crown Timber Act);
  - 1.0% for federal lands;
  - 11.3% for areas that are not currently being managed for timber but that have been inventoried (inactive management units);
  - 3.5% for protection forest, i.e., forest land managed primarily to exert beneficial influence on soil, water, landscape, or any other purpose for which production of merchantable timber, if any, is incidental.
- An average of 9.1% of the allocated area (MAD) is reserved from timber management, and a further 3.0% of the allocated area is converted to access infrastructure such as roads and landings.

1.1 Provincial and Territorial Allowable Annual Cut (continued)

Manitoba

Provincial and private lands				Federal land			
Latest period calculated	1986				1990		
Unit of measure	Volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	5 917 580	2 403 380	8 320 960	Indian land	..	..	80 000
Private land - industrial	...	...	...	National parks	-	-	-
- nonindustrial	40 270	564 300	604 570				
- total	40 270	564 300	604 570	Other federal land	..	..	3 500
Total	**5 957 850**	**2 967 680**	**8 925 530**	**Total**	..	..	**83 500**

Summary of factors in AAC determination

- Productive forest area (PFA) includes all forest land capable of producing merchantable wood regardless of its existing stage of productivity.
- 85-88% of the PFA in each forest management unit is considered to be operable to support the AAC, after deductions for no-cut zones, small scattered stands, and fire losses.
- AAC is determined on net operable volume levels matched to the current industrial level of utilization.
- The AAC has been reduced by zoning of lands as closed and restricted (usually in provincial parks).
- AAC is based on the expectation of basic forest management.

Saskatchewan

Provincial and private lands				Federal land			
Latest period calculated	1980-2070				1990		
Unit of measure	Net merchantable volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	3 636 000	3 009 000	6 645 000	Indian land	..	..	455 000
Private land - industrial	...	...	...	National parks	-	-	-
- nonindustrial	..	..	..				
- total	..	..	..	Other federal land	..	..	7 000
Total	**3 636 000**	**3 009 000**	**6 645 000**	**Total**	..	..	**462 000**

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as land that produces timber at a rate of at least 0.5 m^3/ha per year.
- AAC figures apply to the commercial forest zone.
- 88% of the PFA is considered operable to support the AAC.
- An average of 7.8% of the PFA is deducted due to land use restrictions.
- AAC is based on the expectation of basic forest management.
- The expected annual damage by fire is 1 802 389 m^3 for all species in the commercial forest zone.
- An average of 1.3% of volume is deducted due to waste.
- An average of 4.5% of volume is deducted due to decay.

1.1 Provincial and Territorial Allowable Annual Cut (continued)

Alberta

Provincial and private lands				Federal land			
Latest period calculated Unit of measure	1991 Net merchantable volume (m^3)				1990-2001 Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	14 332 244	10 497 719	24 829 963	Indian land	..	..	484 000
Private land - industrial	...	...	...	National parks	400 000[a]	-	400 000
- nonindustrial	..	..	..				
- total	..	..	..	Other federal land	..	..	13 000
Total	**14 332 244**	**10 497 719**	**24 829 963**	**Total**	..	..	**897 000**

[a]Maximum allowable harvest from Timber Berth 408 in Wood Buffalo National Park (agreement expires in the year 2002). Other than this exception, no timber harvest is permitted in national parks.

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as forest lands capable of yielding 50 m^3/ha net roundwood volume by 140 years of age, without enhancement through human activities.
- 92% of the PFA is under the jurisdiction of the Alberta Forest Service.
- 88% of the PFA is available for long-term forest management, after deductions for areas where land use policies exclude timber harvesting activities.
- Deletions for merchantability, economic operability, and operating ground rules (e.g., preservation of stream buffers) reduce the PFA available to support the AAC within a given sustained yield unit from 35% to 85%, because operating conditions and land use restrictions differ from region to region within the province.
- AACs are derived on the basis of individual sustained yield units. The AACs are reexamined periodically depending on the activities and conditions within that unit.
- The provincial fire suppression goal is to limit the area burned each year to 0.1% of the green area (forest zone). A percentage reduction based on historical fire records is applied to the AAC for each unit to account for fire losses. The maximum reduction is 10% by volume, consistent with the provincial fire suppression objective.

1.1 Provincial and Territorial Allowable Annual Cut (continued)

British Columbia

Provincial and private lands				Federal land			
Latest period calculated	1991				1990		
Unit of measure	Net merchantable volume (m^3)				Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	69 218 900	2 318 000	71 536 900	Indian land	..	..	462 000
Private land - industrial	2 915 700[a]	..	2 915 700	National parks	-	-	-
- nonindustrial	..	..	..				
- total	..	..	..	Other federal land	..	..	76 000
Total	**72 134 600[b]**	**2 318 000**	**74 452 600**	**Total**	**..**	**..**	**538 000**

[a]Includes private holdings within tree farm licences (TFLs) and significant volumes from timber licences (which are Crown-owned lands)
[b]Includes less than 100 000 m^3 hardwood volume from TFLs

Summary of factors in AAC determination

- Productive forest area (PFA) is defined as Crown-owned forest land available for forestry. Excluded are federal lands, Indian reserves, parks, ecological and special reserves, and miscellaneous Crown categories (e.g., timber alienated).
- 48% of the PFA is considered operable to support the AAC (i.e., net operable land base), after excluding the following: roads and rights-of-way; environmentally sensitive areas (ESAs); low site areas; deciduous types (generally); unmerchantable types; and nonstocked forest land.
- The expected level of forest management varies between basic and intensive.

1.1 Provincial and Territorial Allowable Annual Cut (concluded)

Yukon

Provincial and private lands				Federal land			
Latest period calculated Unit of measure	1990 Net merchantable volume (m^3)				1990 Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	..	..	..	Indian land	...	...	...
Private land - industrial	...	...	...	National parks	...	...	...
- nonindustrial	..	..	..				
- total	..	..	..	Other federal land	...	...	...
Total	..	..	..	**Total**	...	...	...

Summary of factors in AAC determination

- Yukon has no established AAC.
- Forest inventory work is well under way and, as areas are completed, forest management plans will be developed and AACs estimated.
- Preliminary yield estimates confirm that current harvest levels are well within the yield capacity of Yukon's forests.
- A forest management plan for the southeast Yukon is nearly completed and will result in an AAC being established for that area.

Northwest Territories

Provincial and private lands				Federal land			
Latest period calculated Unit of measure	1990 Net merchantable volume (m^3)				1990 Net merchantable volume (m^3)		
	Softwoods	Hardwoods	Total		Softwoods	Hardwoods	Total
Provincial Crown land	2 600	1 300	3 900	Indian land	...	...	...
Private land - industrial	...	...	...	National parks	...	...	...
- nonindustrial	..	..	..				
- total	..	..	..	Other federal land	...	...	...
Total	**2 600**	**1 300**	**3 900**	**Total**	...	...	...

Summary of factors in AAC determination

- AAC calculations are based on limited inventory information.
- 30% of the inventoried forested area is considered timber productive to support a softwood sawtimber AAC of 155 000 m^3 net merchantable volume.
- Pulpwood is not currently considered. Information on hardwood production is limited.
- Work is presently under way to better identify the productive forest land base and that portion of the forest land base suitable for production.

SECTION 2. FOREST FIRES AND FOREST INSECTS

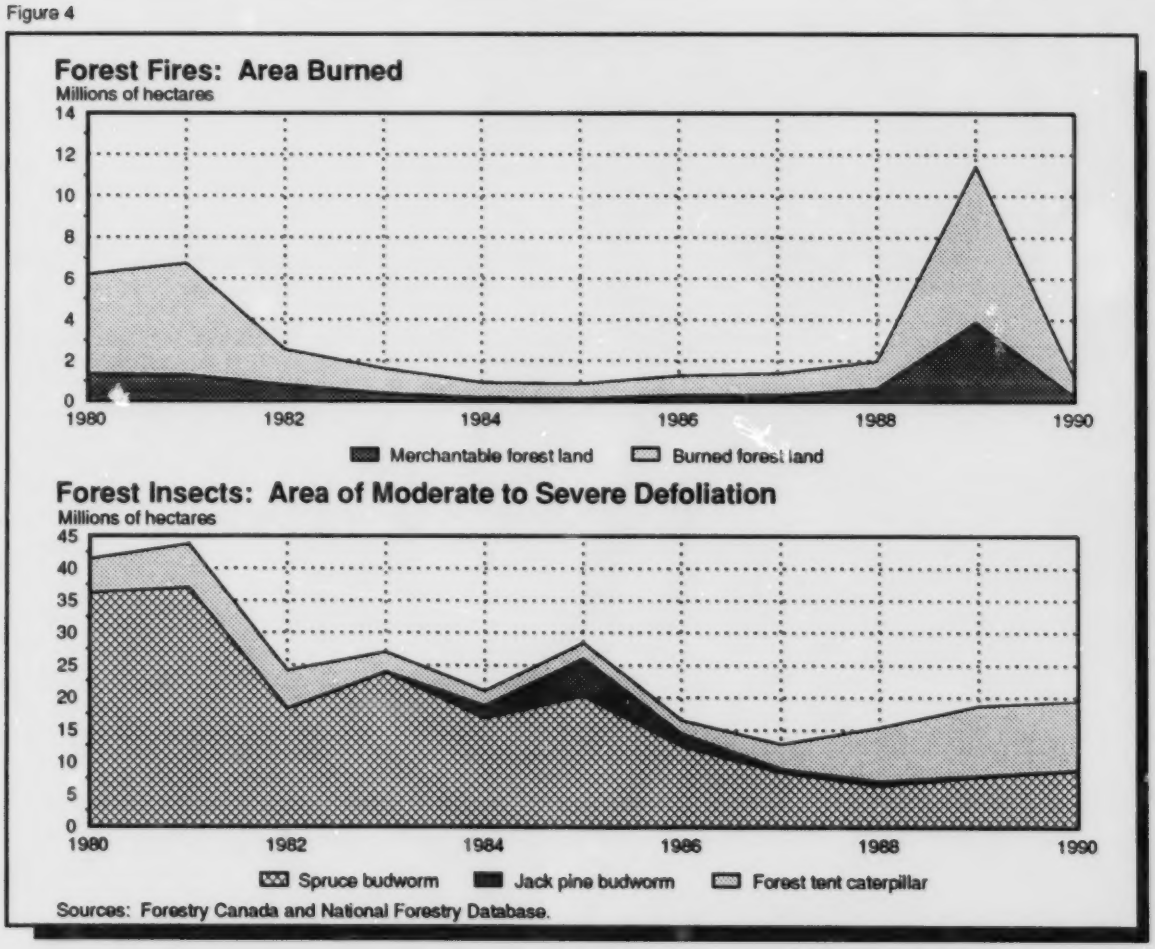
FOREST FIRES

Forest fire statistics are reported by the provincial, territorial, and federal forest fire management agencies. Forestry Canada compiles annual statistics that primarily report the number of fires, their causes, and the area of forest land that was burned.

FOREST INSECTS

Statistics on forest insects were compiled by the Forest Insect and Disease Survey (FIDS) of Forestry Canada.

Figure 4



TERMINOLOGY

CAUSE CLASS

Various reasons for forest fire occurrence.

People — Includes causes such as: recreation, residence, forest industry, railroad, other industry, incendiary origin, and miscellaneous. (8)

Lightning

Unknown — Includes fires of undeterminable cause. (8)

MATURITY CLASS

Trees or stands grouped according to their stage of development from establishment to suitability for harvest. A maturity class may comprise one or more age classes. (5)

Regeneration — The renewal of a forest crop by natural or artificial means. Also the new crop so obtained. The new crop is generally less than 1.3 m in height. (5)

Immature — In even-aged management, those trees or stands that have grown past the regeneration stage but are not yet mature. (2)

Mature — In even-aged management, those trees or stands that are sufficiently developed to be harvestable and that are at or near rotation age (includes overmature trees and stands if an overmature class has not been recognized). (5)

Overmature — In even-aged management, those trees or stands past the mature stage. (5)

Uneven-aged — Of a forest, stand, or forest type in which intermingling trees differ markedly in age. The differences in age permitted in an uneven-aged stand are usually greater than 10 to 20 years. (5)

Merchantable forest — Trees or stands that have attained sufficient size, quality, or volume to make them suitable for harvesting. The term does not imply accessibility, economic or otherwise. (5) It includes mature, overmature, and uneven-aged forests.

TERMINOLOGY (concluded)

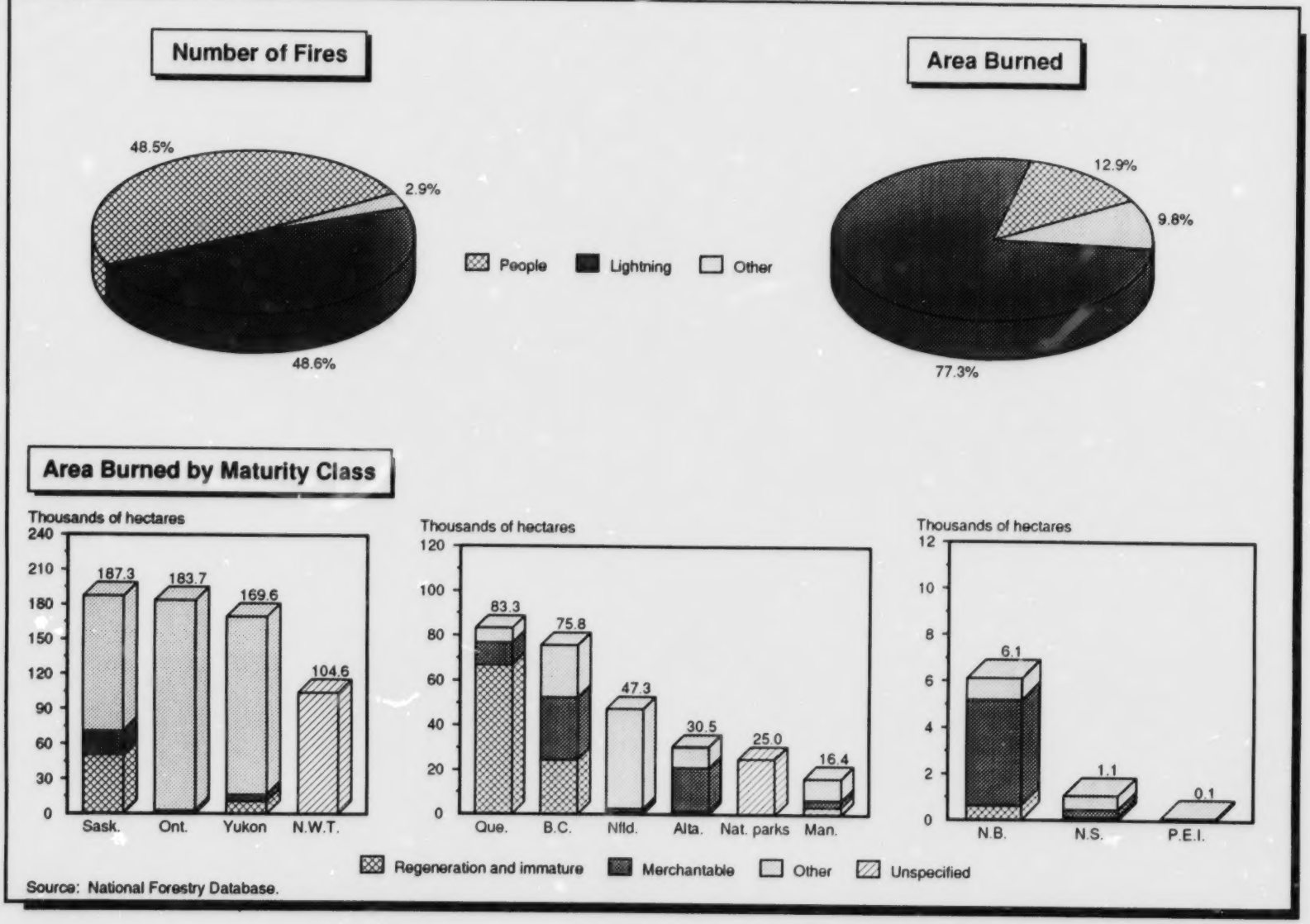
OWNERSHIP/TENURE

The holding, particularly as to manner or term, of a property where the responsibility for forest management rests with the forest owner. (2)
Legislation defines a number of forestry tenures by which the cutting of timber and other user rights to Crown land are assigned.

PROVINCIAL CROWN LAND	**Long-term licence**	Public lands held under a long-term licence such as Forest Management Agreement (FMA), Tree Farm Licence (TFL), Timber Supply and Forest Management Agreement (TSFMA), or equivalent. (3)
	Other tenure	Public lands, other than those under long-term licence, held under a variety of tenure arrangements or volume allotments; for example, unregulated tenure (timber licence, timber berth) in British Columbia. (3)
PRIVATE LAND	**Industrial land**	Land owned by a large corporate industry for commercial forestry purposes. (2)
	Nonindustrial land	Land owned by corporations or individuals that may or may not be used for commercial forestry purposes. (2) These corporations may include churches, municipalities, villages, townships, companies, limited partnerships, organizations, and associations.
FEDERAL LAND	**Indian land**	Lands within Indian reserves or Indian settlements. (2)
	National parks	
	Other federal land	Other Crown land within the jurisdiction of the federal government. Includes lands held by National Defense, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transportation, and Crown Corporations. (2)

FOREST FIRES - 1990

Figure 5



Source: National Forestry Database.

2.1 Forest Fire Statistics by Province/Territory, 1990

Cause class/ maturity class	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	National parks	Canada
A. Number of forest fires by cause class															
People[a]	1990	170	30	442	318	595	942	288	434	367	1 196	80	38	..	**4 900**
Lightning	1990	27	-	8	29	256	645	282	463	914	2 015	74	196	..	**4 909**
Unknown[b]	1990	-	8	48	30	..	27	-	-	15	44	-	2	128	**302**
Total	1990	197	38	498	377	851	1 614	570	897	1 296	3 255	154	236	128	**10 111**
B. Area burned by cause class (ha)															
People[a]	1990	3 865	82	1 029	6 102	18 667	8 752	5 938	32 672	2 212	40 004	1 123	11	..	**120 457**
Lightning	1990	43 452	-	..	7	..	174 916	10 427	154 677	27 652	35 504	168 478	104 604	..	**719 717**
Unknown[b]	1990	-	20	39	5	64 676	26	-	-	670	270	-	1	25 041	**90 748**
Total	1990	47 317	102	1 068	6 114	83 343	183 693	16 365	187 349	30 534	75 778	169 601	104 616	25 041	**930 921**
C. Area of stocked timber-productive forest land burned, by maturity class (ha)															
Regeneration and immature	1990	1 279	3	129	632	66 819	210	3 562	50 731	1 538	24 558	10 821	..	..	**160 282**
Merchantable forest	1990	1 322	1	348	4 566	10 007	2 990	3 166	20 467	19 743	28 017	5 883	..	..	**96 510**
Total	1990	2 601	4	477	5 198	76 825	3 200	6 727	71 198	21 281	52 575	16 704	..	..	**256 790**

[a]People comprises recreation, residence, forest industry, railroad, other industry, incendiary causes, and miscellaneous known causes.
[b]Unknown includes fires of undeterminable cause.

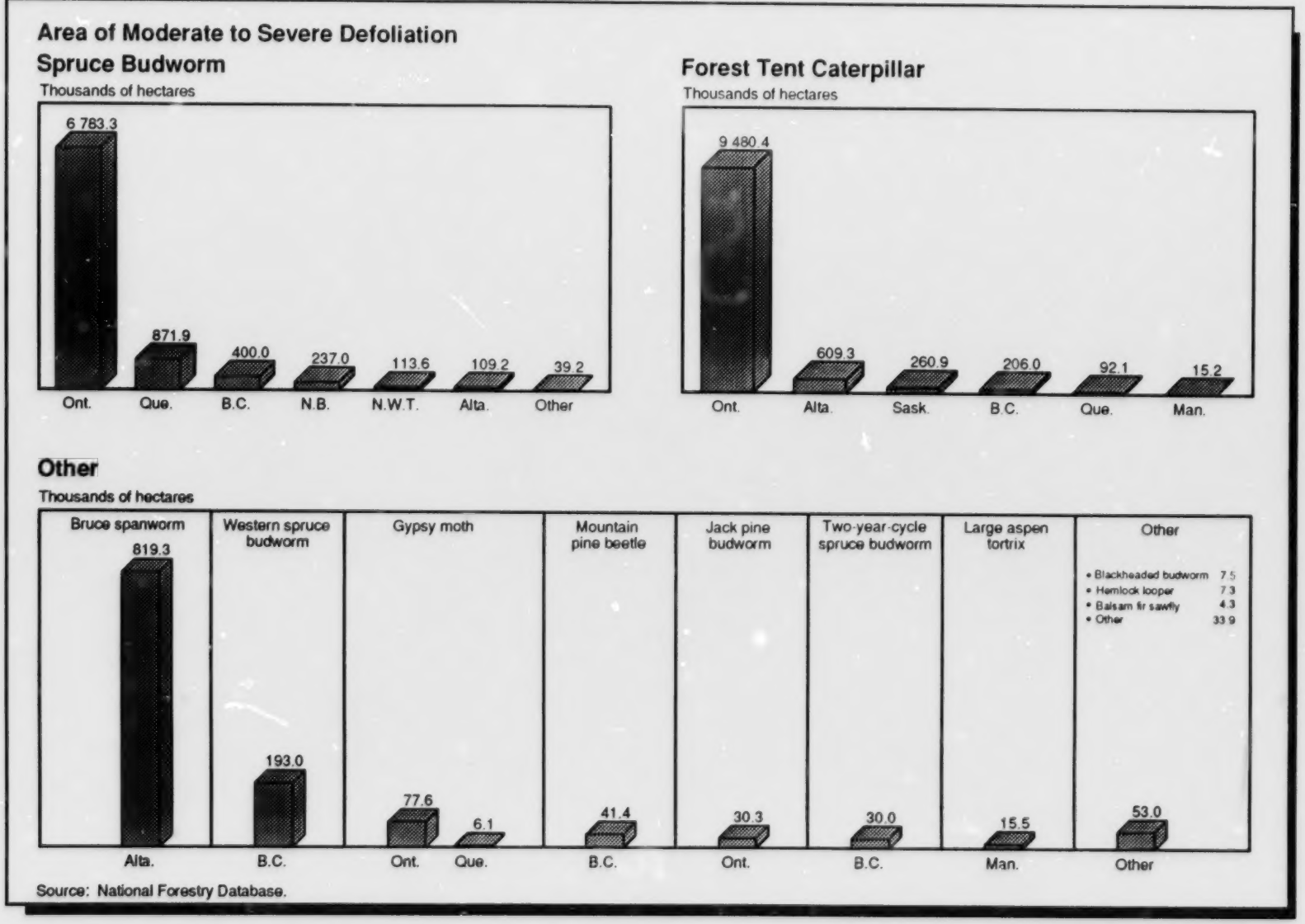
Note - Que. 1990 Figures include intensive and limited protection zones.

Sask. 1990 Figures include intensive and limited protection zones.

Source: National Forestry Database.

FOREST INSECTS - 1990

Figure 6



Source: National Forestry Database.

2.2 Area of Moderate to Severe Defoliation* by Ownership, Selected Major Insects, and Province/Territory, 1990

(Hectares)

Insects	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Spruce budworm	1990	70	..	-	113 760	..	..	..	..	..	400 000	-	..	..
Mountain pine beetle	1990	-	-	-	-	-	-	-	-	-	40 000	-	-	40 000
Hemlock looper	1990	990	-	-	3 500	-	-	-	-	-	1 150	-	-	5 640
Forest tent caterpillar	1990	-	-	-	-	..	..	..	..	..	155 000	-	-	..
Other	1990	4 420	..	-	-	..	..	..	..	..	250 130	-	..	..
Total	1990	5 480	..	-	117 260	..	..	..	..	..	846 280	-	..	..
B. Private land														
Spruce budworm	1990	1 230	..	-	123 240	..	..	..	..	..	-	..	..	..
Mountain pine beetle	1990	-	-	-	-	-	-	-	-	-	1 400	..	-	..
Hemlock looper	1990	1 670	-	-	-	-	-	-	-	-	-	..	-	..
Forest tent caterpillar	1990	-	-	-	-	..	..	..	..	..	51 000	..	-	..
Other	1990	7 330	..	-	-	..	..	..	..	..	6 200	..	..	..
Total	1990	10 230	..	-	123 240	..	..	..	..	..	58 600	..	..	..
C. Provincial and private lands														
Spruce budworm	1990	1 300	100	-	237 000	871 850	6 783 261	18 985	18 780	109 150	400 000	-	113 625	8 554 051
Jack pine budworm	1990	-	-	-	-	-	30 325	-	-	-	-	-	-	30 325
Mountain pine beetle	1990	-	-	-	-	-	-	-	-	-	41 400	-	-	41 400
Hemlock looper	1990	2 660	-	-	3 500	-	-	-	-	-	1 150	-	-	7 310
Forest tent caterpillar	1990	-	-	-	-	92 090	9 480 408	15 178	260 922	609 272	206 000	-	-	10 663 870
Gypsy moth	1990	-	-	-	-	6 075	77 648	-	-	-	-	-	-	83 723
Other	1990	11 750	-	-	-	615	-	15 540	-	819 284	256 330	-	-	1 103 519
Total	1990	15 710	100	-	240 500	970 630	16 371 642	49 703	279 702	1 537 706	904 880	-	113 625	20 484 198
D. Federal land	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
E. Total														
Spruce budworm	1990	1 300	100	-	237 000	871 850	6 783 261	18 985	18 780	109 150	400 000	-	113 625	8 554 051
Jack pine budworm	1990	-	-	-	-	-	30 325	-	-	-	-	-	-	30 325
Mountain pine beetle	1990	-	-	-	-	-	-	-	-	-	41 400	-	-	41 400
Hemlock looper	1990	2 660	-	-	3 500	-	-	-	-	-	1 150	-	-	7 310
Forest tent caterpillar	1990	-	-	-	-	92 090	9 480 408	15 178	260 922	609 272	206 000	-	-	10 663 870
Gypsy moth	1990	-	-	-	-	6 075	77 648	-	-	-	-	-	-	83 723
Other	1990	11 750	-	-	-	615	-	15 540	-	819 284	256 330	-	-	1 103 519
Total	1990	15 710	100	-	240 500	970 630	16 371 642	49 703	279 702	1 537 706	904 880	-	113 625	20 484 198

*Moderate to severe defoliation (30% or more of current foliage removed).

2.2 Area of Moderate to Severe Defoliation[a] by Ownership, Selected Major Insects, and Province/Territory, 1990 (concluded)
(Hectares)

Insects	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada

Note - Nfld. 1990 "Other" on provincial Crown land comprises blackheaded budworm (120 ha) and balsam fir sawfly (4 300 ha).
"Other" on private land comprises blackheaded budworm (7 330 ha).

Que. 1990 "Other" on provincial and private lands comprises Swaine jack pine sawfly (615 ha).

Man. 1990 "Other" on provincial and private lands comprises large aspen tortrix (15 540 ha).

Alta. 1990 "Other" on provincial and private lands comprises Bruce spanworm (819 284 ha).

B.C. 1990 Provincial Crown land includes provincial parks.
"Mountain pine beetle" on private land includes farm/ranch lands and national parks in the Nelson region.
"Spruce budworm" includes a small amount in Yukon.
"Other" on provincial Crown land comprises western spruce budworm (190 000 ha), two-year-cycle spruce budworm (30 000 ha), large aspen tortix (16 500 ha), spruce beetle (10 000 ha), Douglas-fir beetle (1 600 ha), gray spruce looper (1 400 ha) and blackheaded budworm (630 ha). "Other" on private land comprises western spruce budworm (3 000 ha), spruce beetle (3 000 ha) and Douglas-fir beetle (200 ha).

Source: National Forestry Database.

SECTION 3. FOREST PRODUCTS

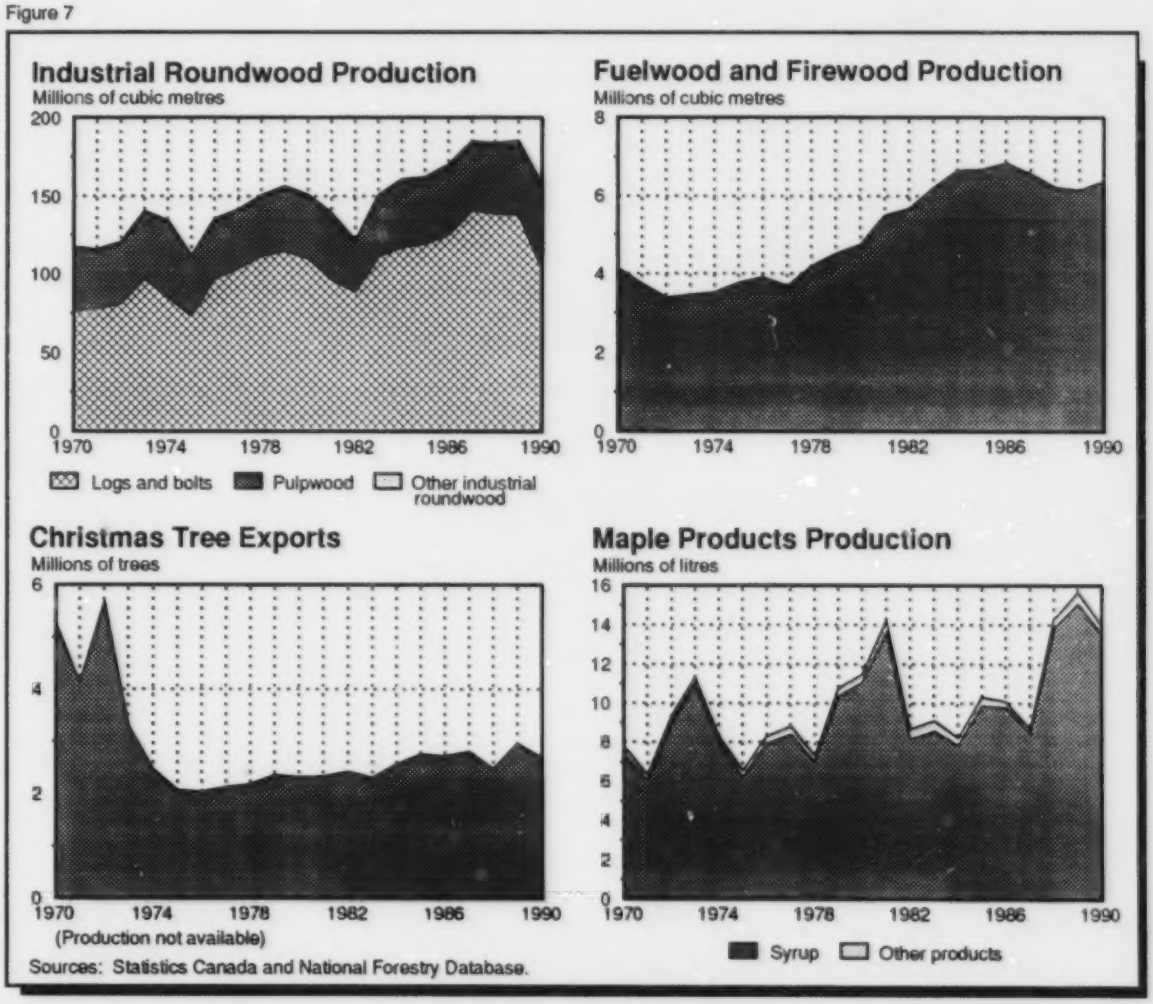
A multitude of products can be harvested from the forest. Some of them are roundwood, maple syrup, and Christmas trees.

ROUNDWOOD • **Defined as sections of tree stems, with or without bark. Included are logs, bolts, posts, pilings, and other products still "in the round" in the subcategory called industrial roundwood. Also included are fuelwood (for industrial or institutional needs) and firewood (for household or recreational needs).**

CHRISTMAS TREES • **Mainly pine and balsam fir.**

MAPLE PRODUCTS • **Syrup, sugar, taffy, and butter.**

Figure 7



TERMINOLOGY

ROUNDWOOD CATEGORY

Roundwood corresponds to sections of tree stems, with or without bark. It includes logs, bolts, posts, pilings, and other products still "in the round" in the subcategory called industrial roundwood. It also includes fuelwood and firewood.

Logs and bolts

Logs: The stem of a tree after it has been felled. The raw material from which lumber, plywood, and other wood products are processed.

Bolts: Raw material used in the manufacture of shingles and shakes. Short logs to be sawn for lumber or peeled for veneer. (9)

Pulpwood

Wood used to produce pulp used in the manufacture of paper products; pulpwood is usually wood that is too small, of inferior quality, or the wrong species to be used in the manufacture of lumber or plywood. (9)

Other industrial roundwood

Includes poles, pilings, and other products still in the round.

Total industrial roundwood

Includes logs and bolts, pulpwood, and other industrial roundwood.

Fuelwood

Wood, including cull logs, branches, etc., used to fuel fires in a boiler (9) or furnace for industrial or institutional needs.

Firewood

Wood to be used as fuel (9) in a household or for recreational needs.

SPECIES GROUPS

Softwoods

Cone-bearing trees having needle- or scale-like leaves, belonging to the botanical group Gymnospermae. Also, stands of such trees and the wood produced by them. (5)

Hardwoods

Trees with broad leaves that are usually shed annually, belonging to the botanical group Angiospermae. Also, stands of such trees and the wood produced by them. (5)

TERMINOLOGY (concluded)

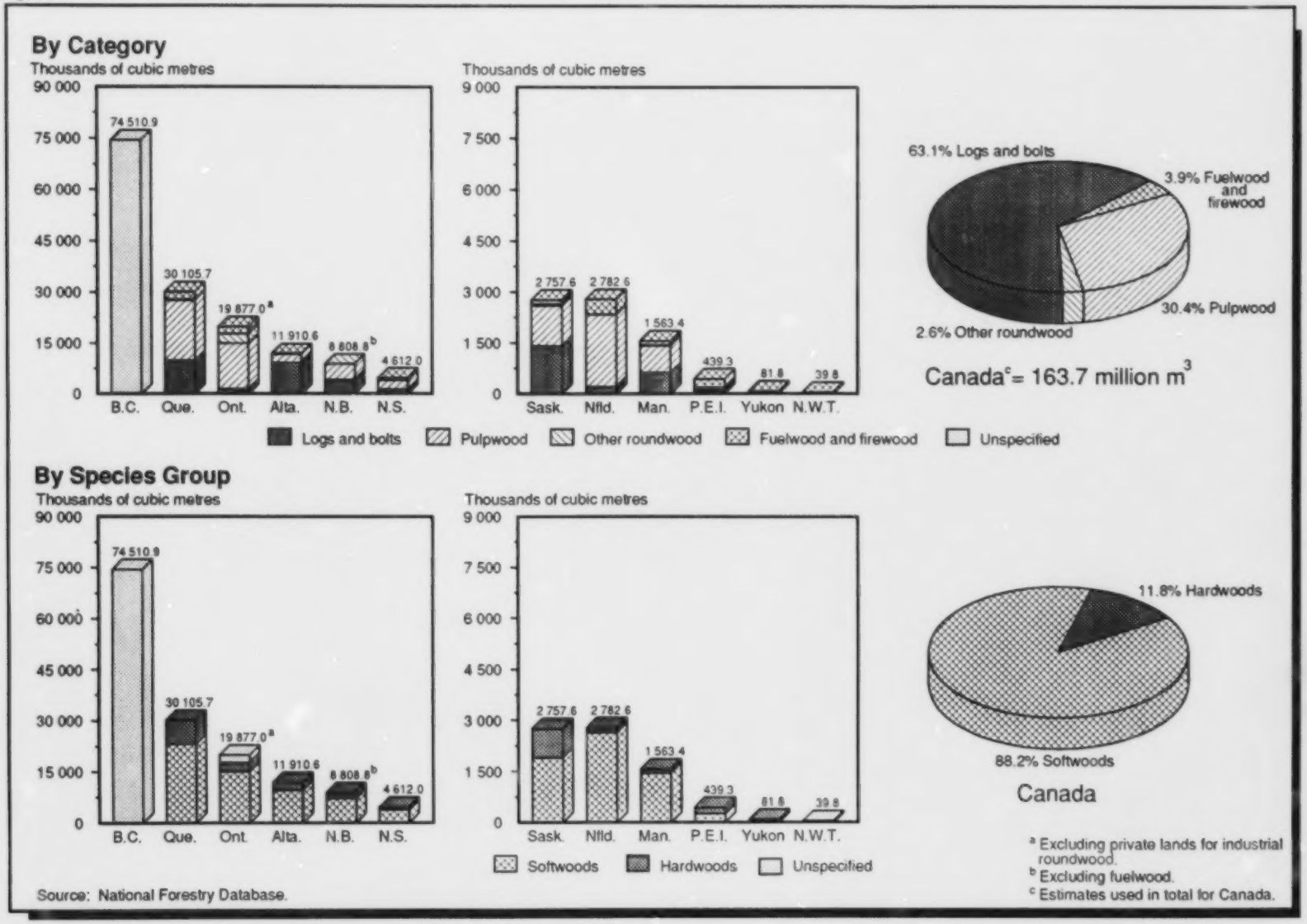
OWNERSHIP/TENURE

The holding, particularly as to manner or term, of a property where the responsibility for forest management rests with the forest owner. (2)
Legislation defines a number of forestry tenures by which the cutting of timber and other user rights to Crown land are assigned.

PROVINCIAL CROWN LAND	**Long-term licence**	Public lands held under a long-term licence such as Forest Management Agreement (FMA), Tree Farm Licence (TFL), Timber Supply and Forest Management Agreement (TSFMA), or equivalent. (3)
	Other tenure	Public lands, other than those under long-term licence, held under a variety of tenure arrangements or volume allotments; for example, unregulated tenure (timber licence, timber berth) in British Columbia. (3)
PRIVATE LAND	**Industrial land**	Land owned by a large corporate industry for commercial forestry purposes. (2)
	Nonindustrial land	Land owned by corporations or individuals that may or may not be used for commercial forestry purposes. (2) These corporations may include churches, municipalities, villages, townships, companies, limited partnerships, organizations, and associations.
FEDERAL LAND	**Indian land**	Lands within Indian reserves or Indian settlements. (2)
	National parks	
	Other federal land	Other Crown land within the jurisdiction of the federal government. Includes lands held by National Defense, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transportation, and Crown Corporations. (2)

ROUNDWOOD PRODUCTION - 1990

Figure 8

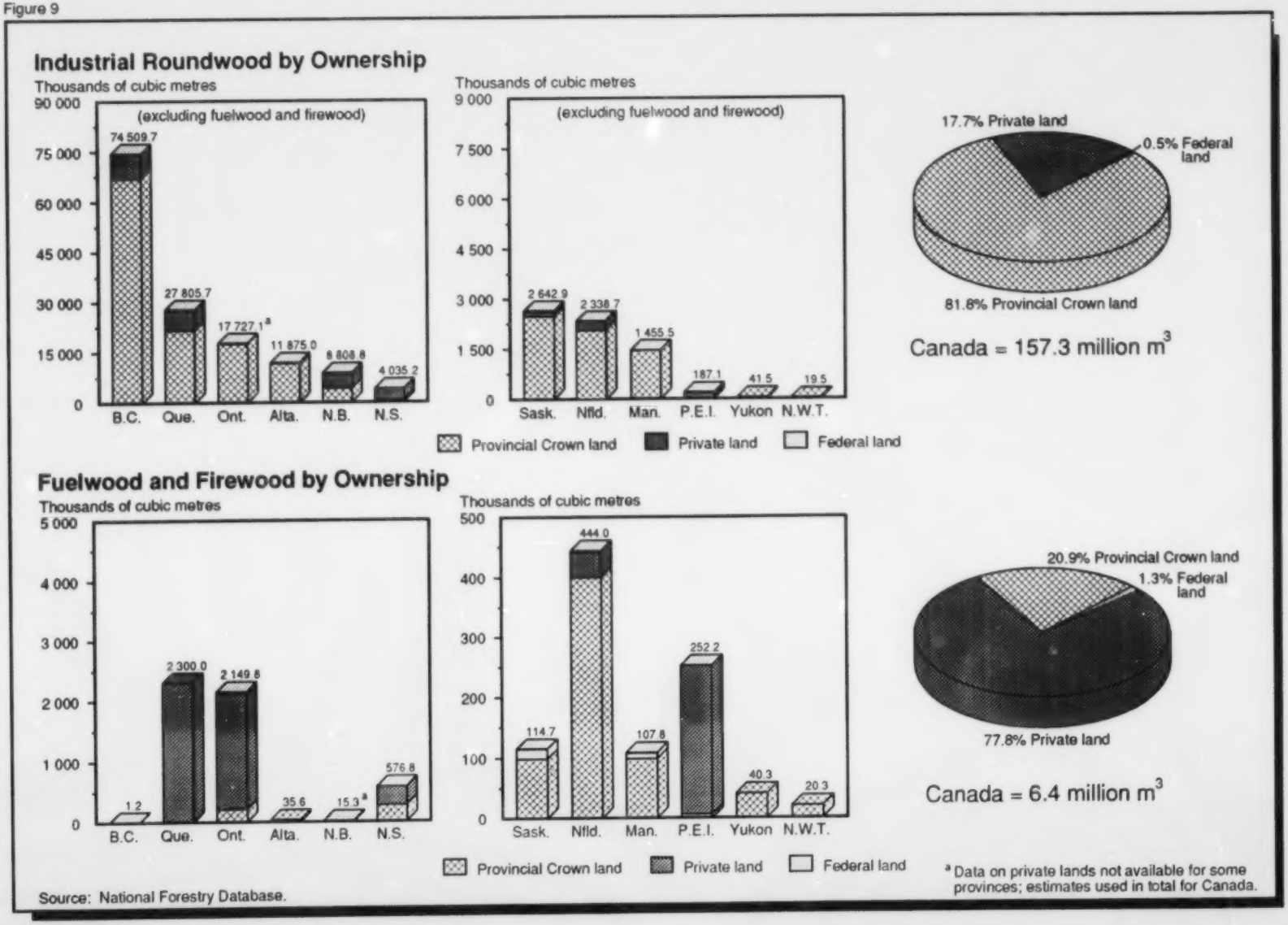


Source: National Forestry Database.

[a] Excluding private lands for industrial roundwood.
[b] Excluding fuelwood.
[c] Estimates used in total for Canada.

ROUNDWOOD PRODUCTION - 1990

Figure 9



[a] Data on private lands not available for some provinces; estimates used in total for Canada.

Source: National Forestry Database.

3.1 Net Merchantable Volume of Roundwood Harvested by Ownership, Category, Species Group, and Province/Territory, 1990

(Thousands of cubic metres)

Category/ species group	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Logs and bolts														
Softwoods	1990	163*	2	120	1 950	7 407*	1 096	588	1 241	7 767	..	39	20	..
Hardwoods	1990	-	-	4	96	546*	329	42	159	1 216	..	-	-	..
Total	1990	163*	2	124	2 046	7 952*	1 425	631	1 400	8 983	..	39	20	..
Pulpwood														
Softwoods	1990	1 908	4	350	1 719	11 606*	11 258	769	517	1 518	..	-	-	..
Hardwoods	1990	-	-	62	482	1 943*	2 095	27	516	1 085	..	-	-	..
Total	1990	1 908	4	411	2 202	13 549*	13 353	796	1 033	2 603	..	-	-	..
Other industrial roundwood														
Softwoods	1990	-	-	..	-	70	2 555	27	56	22	..	2	-	..
Hardwoods	1990	-	-	-	-	31	229	-	-	2	..	-	-	..
Total	1990	-	-	..	-	101	2 784	27	56	24	..	2	-	..
Total - industrial roundwood[a]														
Softwoods	1990	2 070*	6	470	3 669	19 083	14 909	1 385	1 814	9 307	..	42	20	..
Hardwoods	1990	-	-	65	578	2 519	2 653	69	674	2 303	..	-	-	..
Total	1990	2 070*	6	535	4 248	21 603	17 563	1 454	2 488	11 609	66 908	42	20	**127 000***
Fuelwood[b]														
Softwoods	1990	34	-	..	..	..	..	-	-	..	..	-	..	..
Total	1990	34	-	241	..	..	..	-	-	..	..	-	..	..
Firewood[c]														
Softwoods	1990	257	3	..	..	-	..	63	57	20	..	39	..	..
Hardwoods	1990	109	3	27	..	-	..	35	40	16	..	1	..	..
Total	1990	366	6	27	..	-	..	98	98	36	..	40	..	..
Total - fuelwood and firewood														
Softwoods	1990	292	3	..	..	-	..	63	57	20	..	39	20	..
Hardwoods	1990	109	3	..	..	-	..	35	40	16	..	1	..	..
Total	1990	400	6	269	..	-	211	98	98	36	..	40	20	..
Total - provincial Crown land														
Softwoods	1990	816*	9	..	3 669	19 083	..	1 448	1 871	9 327	..	81	40	..
Hardwoods	1990	109	3	..	578	2 519	..	104	715	2 318	..	1	..	..
Total	1990	925*	12	804	4 248	21 603	17 774	1 552	2 586	11 645	66 908	82	40	**128 178***

3.1 Net Merchantable Volume of Roundwood Harvested by Ownership, Category, Species Group, and Province/Territory, 1990 (continued)

(Thousands of cubic metres)

Category/ species group	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
B. Private land														
Logs and bolts														
Softwoods	1990	51[e]	106[e]	1 087	1 891	1 429[p]	..	..	-	..	..	..	..	..
Hardwoods	1990	10[e]	2[e]	71	126	457[p]	..	..	-	..	..	..	..	..
Total	1990	61[e]	108[e]	1 158	2 018	1 886[p]	..	..	-	..	..	..	..	..
Pulpwood														
Softwoods	1990	206	61[e]	2 081	1 506	2 448[p]	..	..	23	..	..	..	..	..
Hardwoods	1990	-	-	260[p]	953	1 604[p]	..	..	124	..	..	..	..	..
Total	1990	206	61[e]	2 341[p]	2 459	4 052[p]	..	..	147	..	..	..	..	..
Other industrial roundwood														
Softwoods	1990	-	10[e]	..	-	5[p]	..	..	-	..	..	..	..	..
Hardwoods	1990	-	2[e]	-	-	129[p]	..	..	-	..	..	..	..	..
Total	1990	-	12[e]	..	-	134[p]	..	..	-	..	..	..	..	..
Total - industrial roundwood[a]														
Softwoods	1990	257[e]	177[e]	3 168	3 398	3 882[p]	..	..	23	..	..	..	..	..
Hardwoods	1990	10[e]	4[e]	331[p]	1 079	2 190[p]	..	..	124	..	..	..	..	..
Total	1990	267[e]	181[e]	3 499[p]	4 477	6 072[p]	..	..	147	..	7 396	..	..	..
Fuelwood[b]														
Softwoods	1990	31	30	..	..	..	..	..	-	..	..	..	..	..
Hardwoods	1990	13	6	..	..	..	..	..	-	..	..	..	..	..
Total	1990	43	36	9	..	..	..	..	-	..	..	..	..	..
Firewood[c]														
Softwoods	1990	-	42[e]	17[e]	..	-	..	..	-	..	..	..	..	..
Hardwoods	1990	1	168[e]	281[e]	..	2 300[e]	..	..	-	..	..	..	..	..
Total	1990	1	210[e]	299[e]	..	2 300[e]	..	..	-	..	..	..	..	..
Total - fuelwood and firewood														
Softwoods	1990	31	72[e]	..	..	-	..	..	-	..	..	..	..	..
Hardwoods	1990	13	174[e]	..	..	2 300[e]	..	..	-	..	..	..	..	..
Total	1990	44	246[e]	307[e]	..	2 300[e]	1 900[e]	..	-	..	..	..	..	..
Total - private land														
Softwoods	1990	1 833[e]	249[e]	..	3 398	3 882[p]	..	..	23	..	..	..	..	..
Hardwoods	1990	23[e]	178[e]	..	1 079	4 490[e]	..	..	124	..	..	..	..	..
Total	1990	1 856[e]	427[e]	3 806[e]	4 477	8 372[e]	..	..	147	..	7 396	..	..	..

3.1 Net Merchantable Volume of Roundwood Harvested by Ownership, Category, Species Group, and Province/Territory, 1990 (continued)

(Thousands of cubic metres)

Category/ species group	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
C. Provincial and private lands														
Logs and bolts														
Softwoods	1990	214*	108*	1 207	3 841	8 836*	..	588	1 241	7 767	..	39	20	..
Hardwoods	1990	10*	2*	75	222	1 003*	..	42	159	1 216	..	-	-	..
Total	1990	224*	110*	1 281	4 063	9 838*	..	631	1 400	8 983	..	39	20	..
Pulpwood														
Softwoods	1990	2 113	65*	2 430	3 226	14 054*	..	769	540	1 518	..	-	-	..
Hardwoods	1990	-	-	322[p]	1 435	3 547*	..	27	640	1 085	..	-	-	..
Total	1990	2 113	65*	2 752[p]	4 661	17 601*	..	796	1 180	2 603	..	-	-	..
Other industrial roundwood														
Softwoods	1990	-	10*	..	-	75[p]	..	27	56	22	..	2	-	..
Hardwoods	1990	-	2*	-	-	160[p]	..	-	-	2	..	-	-	..
Total	1990	-	12*	..	-	235[p]	..	27	56	24	..	2	-	..
Total - industrial roundwood[a]														
Softwoods	1990	2 328*	183*	3 637	7 067	22 965[p]	..	1 385	1 837	9 307	..	42	20	..
Hardwoods	1990	10*	4*	396[p]	1 657	4 709[p]	..	69	799	2 303	..	-	-	..
Total	1990	2 338*	187*	4 034[p]	8 724	27 675[p]	..	1 454	2 635	11 609	74 304	42	20	..
Fuelwood[b]														
Softwoods	1990	65	30	142[p]	..	..	..	-	-	..	..	-	..	..
Hardwoods	1990	13	6	108[p]	..	..	..	-	-	..	..	-	..	..
Total	1990	77	36	250[p]	..	..	..	-	-	..	..	-	..	..
Firewood[c]														
Softwoods	1990	257	45*	17*	..	-	..	63	57	20	..	39	..	..
Hardwoods	1990	109	171*	309*	..	2 300*	..	35	40	16	..	1	..	..
Total	1990	366	216*	326*	..	2 300*	..	98	98	36	..	40	..	..
Total - fuelwood and firewood														
Softwoods	1990	322	75*	159[p]	..	-	..	63	57	20	..	39	20	..
Hardwoods	1990	122	177*	417[p]	..	2 300*	..	35	40	16	..	1	..	..
Total	1990	444	252*	576[p]	..	2 300*	2 111*	98	98	36	..	40	20	..
Total - provincial and private lands														
Softwoods	1990	2 650*	258*	3 796[p]	7 067	22 965[p]	..	1 448	1 894	9 327	..	81	40	..
Hardwoods	1990	132*	181*	814[p]	1 657	7 009*	..	104	839	2 318	..	1	..	..
Total	1990	2 781*	439*	4 610[p]	8 724	29 975*	..	1 552	2 733	11 645	74 304	82	40	..

3.1 Net Merchantable Volume of Roundwood Harvested by Ownership, Category, Species Group, and Province/Territory, 1990 (continued)

(Thousands of cubic metres)

Category/ species group	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
D. Federal land														
Logs and bolts														
Softwoods	1990	-	-	--[e]	16[e]	..	71[e]	1[e]	8	196	77	...	...	..
Hardwoods	1990	-	-	-	1[e]	..	21[e]	--[e]	-	-	15	...	...	..
Total	1990	-	-	--[e]	17[e]	..	92[e]	1[e]	8	196	92	...	...	..
Pulpwood														
Softwoods	1990	1	--[e]	2[e]	47[e]	..	24[e]	-	-	-	--	...	...	..
Hardwoods	1990	-	-	-	13[e]	..	40[e]	-	-	-	1	...	...	..
Total	1990	1	--[e]	2[e]	60[e]	..	63[e]	-	-	-	1	...	...	..
Other industrial roundwood														
Softwoods	1990	-	-	-	3[e]	..	7[e]	--[e]	-	-	112	...	...	..
Hardwoods	1990	-	-	-	5[e]	..	2[e]	-	-	70[e]	--	...	...	..
Total	1990	-	-	-	8[e]	..	9[e]	--[e]	-	70[e]	113	...	...	..
Total - industrial roundwood[e]														
Softwoods	1990	1	--[e]	2[e]	66[e]	125	102[e]	1[e]	8	196	189	...	...	**689[e]**
Hardwoods	1990	-	-	-	18[e]	6	63[e]	--[e]	-	70[e]	16	...	...	**174[e]**
Total	1990	1	--[e]	2[e]	85[e]	131	165[e]	1[e]	8	266[e]	206	...	...	**863[e]**
Firewood[e]														
Softwoods	1990	..	-	..	--[e]	..	19[e]	7[e]	9[e]	..	..	...	...	..
Hardwoods	1990	..	--[e]	..	..	..	20[e]	3[e]	8[e]	..	..	...	...	..
Total	1990	..	--[e]	..	..	..	39[e]	10[e]	17[e]	..	..	...	...	..
Total - fuelwood and firewood														
Softwoods	1990	--	-	-	--[e]	..	19[e]	7[e]	9[e]	..	1	...	...	..
Hardwoods	1990	-	--[e]	1[e]	15[e]	..	20[e]	3[e]	8[e]	..	--	...	...	..
Total	1990	--	--[e]	1[e]	15[e]	..	39[e]	10[e]	17[e]	..	1	...	...	..
Total - federal land														
Softwoods	1990	1	--[e]	2[e]	66[e]	125	121[e]	8[e]	16[e]	196	190	...	...	**725[e]**
Hardwoods	1990	-	--[e]	1[e]	33[e]	6	83[e]	3[e]	8[e]	70[e]	16	...	...	**221[e]**
Total	1990	1	--[e]	2[e]	100[e]	131	203[e]	11[e]	25[e]	266[e]	207	...	...	**946[e]**

3.1 Net Merchantable Volume of Roundwood Harvested by Ownership, Category, Species Group, and Province/Territory, 1990 (continued)

(Thousands of cubic metres)

Category/ species group	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
E. Total														
Logs and bolts														
Softwoods	1990	214*	108*	1 207*	3 857*	8 836*	..	589*	1 249	7 962	..	39	20	..
Hardwoods	1990	10*	2*	75	223*	1 003*	..	43*	159	1 216	..	-	-	..
Total	1990	224*	110*	1 281*	4 080*	9 838*	..	632*	1 407	9 178	..	39	20	..
Pulpwood														
Softwoods	1990	2 115	65*	2 432*	3 273*	14 054*	..	769	540	1 518	..	-	-	..
Hardwoods	1990	-	-	322[p]	1 448*	3 547*	..	27	640	1 085	..	-	-	..
Total	1990	2 115	65*	2 753*	4 720*	17 601*	..	796	1 180	2 603	..	-	-	..
Other industrial roundwood														
Softwoods	1990	-	10*	--	3*	75[p]	..	28*	56	22	..	2	-	..
Hardwoods	1990	-	2*	-	5*	160[p]	..	-	-	72*	..	-	-	..
Total	1990	-	12*	--	8*	235[p]	..	28*	56	94*	..	2	-	..
Total - industrial roundwood[a]														
Softwoods	1990	2 329*	183*	3 639*	7 133*	23 090[p]	..	1 386*	1 844	9 502	..	42	20	..
Hardwoods	1990	10*	4*	396[p]	1 676*	4 715[p]	..	70*	799	2 373*	..	-	-	..
Total	1990	2 339*	187*	4 035*	8 809*	27 806[p]	..	1 456*	2 643	11 875*	74 510	42	20	..
Fuelwood[b]														
Softwoods	1990	65	30	142[p]	..	..	..	-	-	..	..	-	..	..
Hardwoods	1990	13	6	108[p]	..	..	..	-	-	..	..	-	..	..
Total	1990	77	36	250[p]	..	..	..	-	-	..	..	-	..	..
Firewood[c]														
Softwoods	1990	257	45*	17*	..	-	..	70*	66*	20	..	39	..	..
Hardwoods	1990	109	171*	309*	..	2 300*	..	37*	49*	16	..	1	..	..
Total	1990	366	216*	326*	..	2 300*	..	108*	115*	36	..	40	..	..
Total - fuelwood and firewood														
Softwoods	1990	322	75*	159[p]	..	-	..	70*	66*	20	..	39	20	..
Hardwoods	1990	122	177*	418*	..	2 300*	..	37*	49*	16	..	1	--	..
Total	1990	444	252*	577*	..	2 300*	2 150*	108*	115*	36	..	40	20	..
Total - all ownerships														
Softwoods	1990	2 651*	258*	3 798*	7 133*	23 090[p]	..	1 456*	1 910*	9 522	..	81	40	..
Hardwoods	1990	132*	181*	814*	1 691*	7 015*	..	107*	847*	2 388*	..	1	--	..
Total	1990	2 783*	439*	4 612*	8 824*	30 106*	..	1 563*	2 758*	11 911*	74 511	82	40	..

[a]Industrial roundwood includes logs and bolts, pulpwood, and other industrial roundwood such as poles, piling, and others.
[b]Fuelwood includes wood harvested for industrial or institutional energy.
[c]Firewood includes wood to be used for household or recreational energy.

3.1 Net Merchantable Volume of Roundwood Harvested by Ownership, Category, Species Group, and Province/Territory, 1990 (concluded)

(Thousands of cubic metres)

Category/ species group		Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada

Note - Nfld. 1990 For provincial and private lands, 1990-1991 figures for logs and bolts are estimates based on 1989-1990 numbers.
Fuelwood volume is based on calendar year and includes sawmill residue.

P.E.I. 1990 Harvest volumes on private land are based on surveys.
The material used for heating fuel is not traditionally merchantable. It is full trees, including stem and branches of all trees on a site.
The harvest of fuelwood is often reported in green tonnes (1 green tonne = 1.2 m^3).

N.B. 1990 Data for federal land have been estimated from data for the previous five years.
A small amount of industrial exported roundwood is excluded.

Que. 1990 The estimates for firewood are based on a Hydro-Quebec survey.

Ont. 1990 A small amount of industrial roundwood harvested on federal land is estimated from 1985, 1986, and 1987.
The estimate of fuelwood on private land is based on previous year's information.

Man. 1990 A small amount of industrial roundwood harvested on federal land is estimated from 1985, 1986, and 1987.

Alta. 1990 For provincial and private lands, logs and bolts includes sawlogs, lumber, and railway ties. Other industrial roundwood includes class A, class B (softwoods), and other (hardwoods).
Firewood is referred to as fuelwood in Alberta's records.

N.W.T. 1990 Information is not available to separate fuelwood from firewood.

Source: National Forestry Database.

3.2 Quantity of Maple Products by Ownership, Category, and Province/Territory, 1990

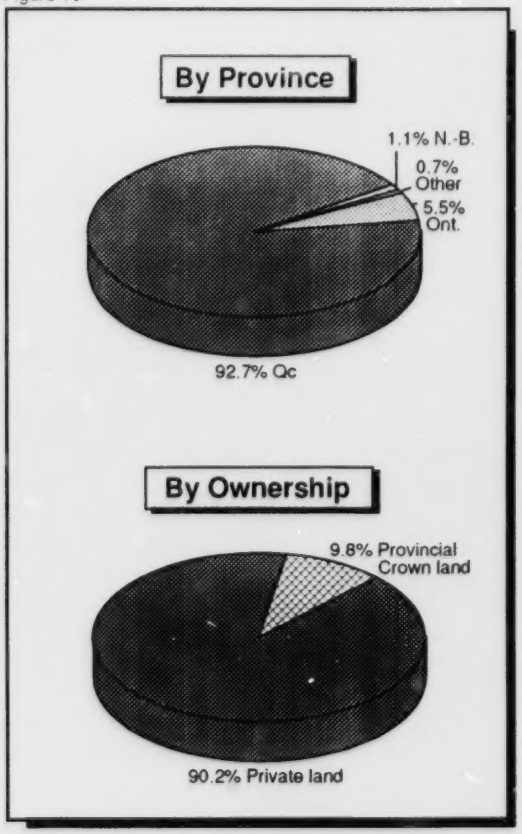
Maple products	Year	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Canada
A. Provincial Crown land								
Syrup - litres	1990	...	5 796	..	1 283 000	..	-	..
Sugar - kilograms	1990	...	490	..	86 368	..	-	..
Taffy - kilograms	1990	...	28	..	-	..	-	..
Butter - kilograms	1990	...	350	..	-	..	-	..
Total maple products - litres	1990	...	6 524	..	1 367 000*	..	-	..
B. Private land								
Syrup - litres	1990	1 150	77 004	..	11 261 000*	..	600	..
Sugar - kilograms	1990	90	6 510	..	60 632*	..	-	..
Taffy - kilograms	1990	47	372	..	156 000*	..	-	..
Butter - kilograms	1990	90	4 650	..	118 000*	..	-	..
Total maple products - litres	1990	1 358	86 676	..	11 588 000*	..	600	..
C. Provincial and private lands*								
Syrup - litres	1990	1 150	82 800	145 000	12 544 000	741 000	600	**13 514 550**
Sugar - kilograms	1990	90	7 000	12 000	147 000	20 400	-	**186 490**
Taffy - kilograms	1990	47	400	-	156 000	..	-	..
Butter - kilograms	1990	90	5 000	-	118 000	..	-	..
Total maple products - litres	1990	1 358	93 200	156 000	12 955 000	761 500	600	**13 967 658**

*There are no maple products harvested commercially on federal land.

Note - Man. 1990 All maple syrup is produced for personal use or direct retail sales.

Sources: National Forestry Database and Statistics Canada.

Figure 10



3.3 Wholesale Value[a] of Maple Products by Ownership, Category, and Province/Territory, 1990

(Thousands of dollars)

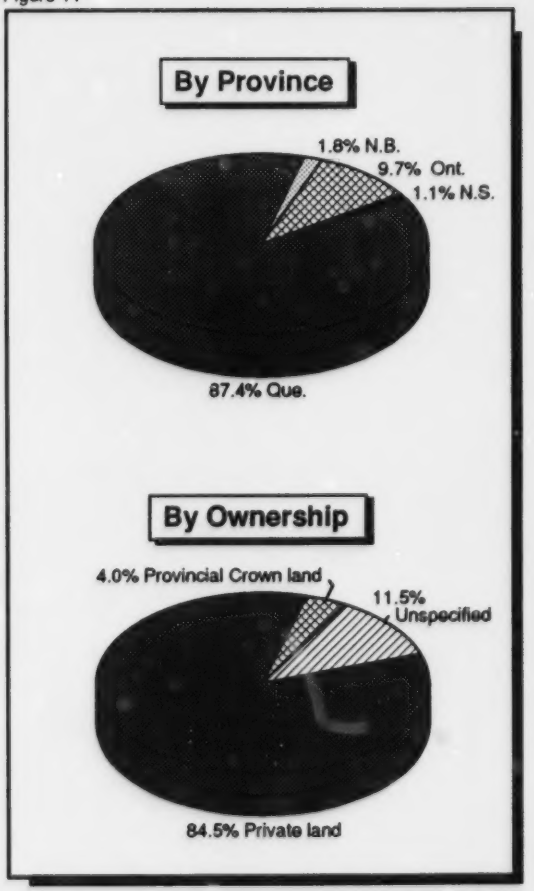
Maple products	Year	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Canada
A. Provincial Crown land								
Syrup	1990	...	46	..	..	..	-	..
Sugar	1990	...	6	..	..	..	-	..
Taffy	1990	...	--	..	-	..	-	..
Butter	1990	...	4	..	-	..	-	..
Total maple products	1990	...	55	..	2 883	..	-	..
B. Private land								
Syrup	1990	14	607	..	..	..	..	..
Sugar	1990	1	77	..	..	..	-	..
Taffy	1990	--	6	..	1 508	..	-	..
Butter	1990	1	54	..	1 236	..	-	..
Total maple products	1990	16	745	..	61 140[a]	..	..	..
C. Provincial and private lands[b]								
Syrup	1990	14	653	1 182	59 882	6 776	..	**68 506**
Sugar	1990	1	83	144	1 397	339	-	**1 964**
Taffy	1990	--	6	-	1 508	..	-	..
Butter	1990	1	58	-	1 236	..	-	..
Total maple products	1990	16	800	1 326	64 023	7 114	..	**73 278**

[a]Gross value or farm value.
[b]There are no maple products harvested commercially on federal land.

Note - Man. 1990 All maple syrup is produced for personal use or direct retail sales.

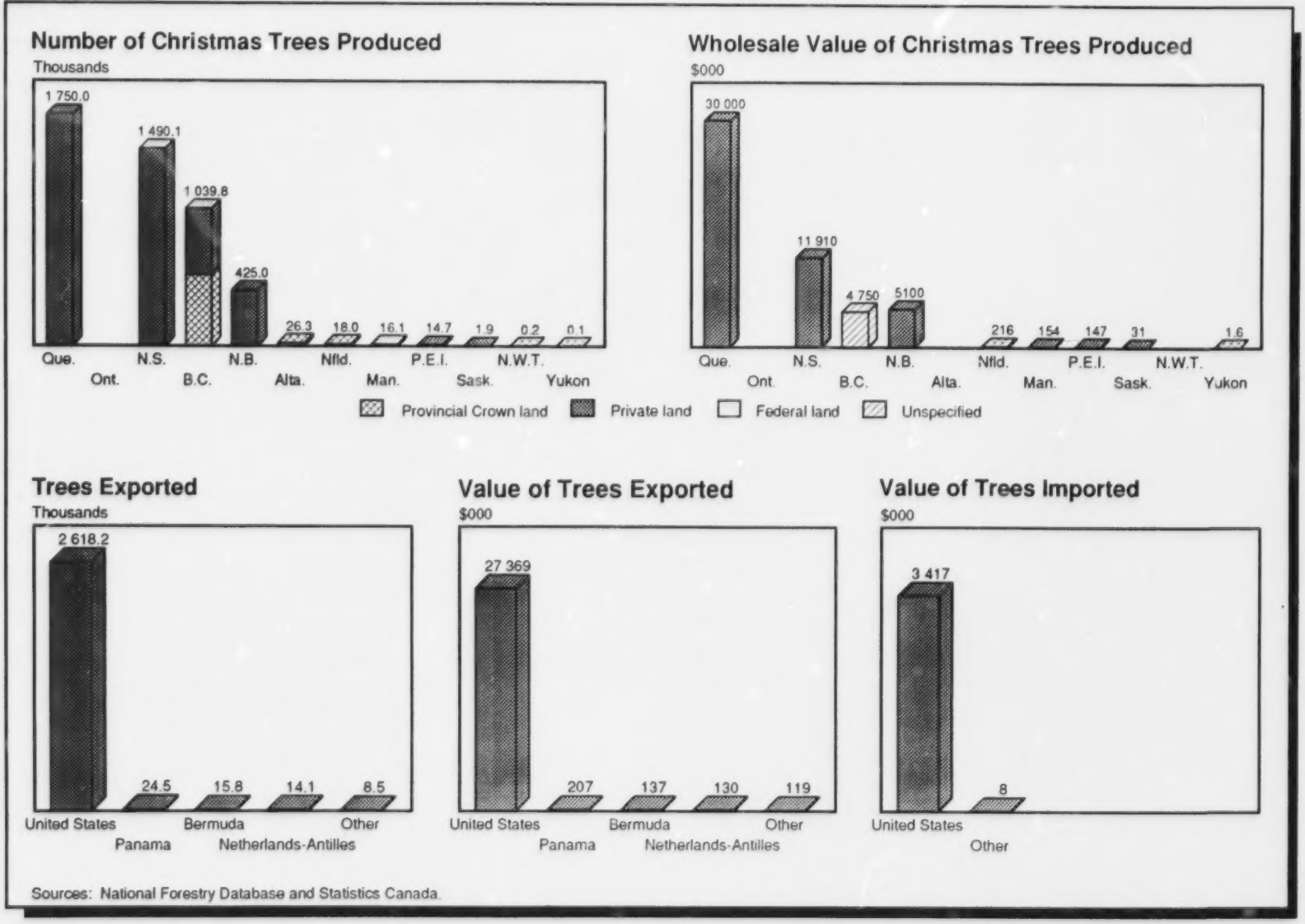
Sources: National Forestry Database and Statistics Canada.

Figure 11



CHRISTMAS TREES - 1990

Figure 12



Sources: National Forestry Database and Statistics Canada.

3.4 Christmas Tree Statistics by Ownership and Province/Territory, 1990

Christmas trees	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Production (thousands)														
Provincial Crown land	1990	18	-	5[e]	-	-	..	12	1	26	539	..	..[e]	..
Private land	1990	-	15	1 485[e]	425	1 750[e]	..	3[e]	1	..	496	..	..	..
Provincial and private lands	1990	18	15	1 490[e]	425	1 750[e]	..	15	2	26	1 035	..	..[e]	..
Federal land	1990	-	-	..[e]	-	-	-	1[e]	-	-	5[e]	...	...	6[e]
Total	1990	18	15	1 490[e]	425	1 750[e]	..	16[e]	2	26	1 040[e]	..	..[e]	..
B. Wholesale value ($ 000)														
Provincial Crown land	1990	216	-	17[e]	-	-	..	124[e]	21[e]	..	..	2	..	..
Private land	1990	-	147	11 893[e]	5 100	30 000[e]	..	30[e]	10	..	..	..	..	..
Provincial and private lands	1990	216	147	11 910[e]	5 100	30 000[e]	..	154[e]	31	..	4 750	2	..	..
Total	1990	216	147	11 910[e]	5 100	30 000[e]	..	154[e]	31	..	4 750	2	..	..
C. Exports (thousands)	1990	-	14	1 230	358	908	48	-	5	-	117	-	-	**2 681**
D. Exports - value ($ 000)	1990	-	119	10 418	3 980	12 528	407	-	46	-	464	-	-	**27 962**
E. Imports - value ($ 000)	1990	-	-	3	2	-	379	443	207	707	1 682	-	-	**3 425**

Note - N.S. 1990 Christmas trees harvested on federal land are for local use by Indian band members (no dollar value).

Man. 1990 Private land figures are estimated from a survey of retail lots in the Winnipeg area.

B.C. 1990 Data for federal land have been estimated from data for the previous five years.

Yukon 1990 Data for provincial Crown land represents the total commercial harvest for the year. In addition, each resident is entitled to harvest up to two Christmas trees per year without a permit.

N.W.T. 1990 The numbers are not available because each resident is entitled to harvest up to two Christmas trees per year without a permit.

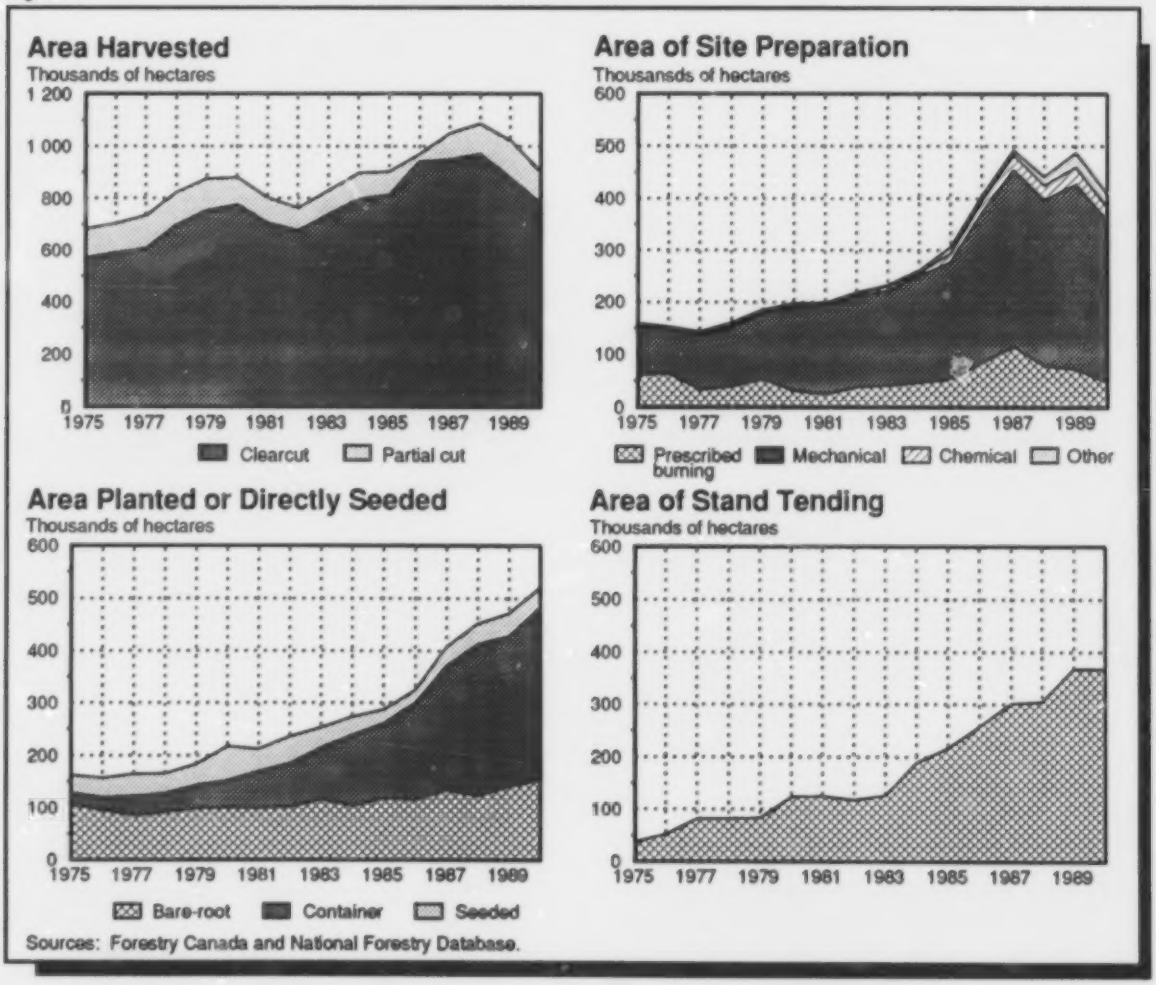
Sources: National Forestry Database and Statistics Canada.

SECTION 4. SILVICULTURE

Responsibility for silvicultural practice in Canada is increasingly delegated to the forest industry by the provincial forest management agencies. The federal role, coordinated by Forestry Canada, is supportive through silvicultural research, technology transfer, and financial assistance for reforestation, stand tending, and pest control programs under specific federal-provincial agreements.

HARVESTING		• Method, forest type
SITE PREPARATION		• Treatment
ARTIFICIAL REGENERATION	Seeding	• Species
	Planting	• Species, stock type, planting method
STAND TENDING		• Treatment, species

Figure 13



Sources: Forestry Canada and National Forestry Database.

TERMINOLOGY

FOREST TYPE

A group of forested areas or stands of similar composition which differentiates it from other such groups. Forest types are usually separated and identified by species composition and often also by height and crown closure classes. (5)

Softwood forest — A forest type in which 76-100% of the canopy is softwood. (5)

Hardwood forest — A forest type in which 0-25% of the canopy is softwood. (5)

Mixedwood forest — A forest type in which 26-75% of the canopy is softwood. (5)

HARVESTING METHOD

Various patterns in which to cut a forested area. (7)

Clearcut — A method of regenerating an even-aged forest stand, in which new seedlings become established in fully exposed microenvironments after removal of most or all of the existing trees. Regeneration can originate naturally or artificially. (1) It includes strip and block cutting.

Partial cut — Any cutting in which only part of the stand is harvested. (7) It includes shelterwood, seed tree, and selection cutting.

SPECIES GROUP

Softwoods — Cone-bearing trees having needle- or scale-like leaves, belonging to the botanical group Gymnospermae. Also, stands of such trees and the wood produced by them. (5)

Hardwoods — Trees with broad leaves that are usually shed annually, belonging to the botanical group Angiospermae. Also, stands of such trees and the wood produced by them. (5)

STOCK TYPE

Type of seedlings planted with or without the use of motor-driven planting machinery. (7)

A seedling is a young tree, grown from seed, from the time of germination to the sapling stage, having a diameter at breast height equal to or less than 1 cm.

Bare-root seedling — A seedling to be planted with its roots bare of soil. (1)

Container seedling — A seedling grown in a container and that is to be planted with roots still in its growth medium. (1)

TERMINOLOGY (continued)

OWNERSHIP/TENURE

The holding, particularly as to manner or term, of a property where the responsibility for forest management rests with the forest owner. (2)
Legislation defines a number of forestry tenures by which the cutting of timber and other user rights to Crown land are assigned.

PROVINCIAL CROWN LAND	**Long-term licence**	Public lands held under a long-term licence such as Forest Management Agreement (FMA), Tree Farm Licence (TFL), Timber Supply and Forest Management Agreement (TSFMA), or equivalent. (3)
	Other tenure	Public lands, other than those under long-term licence, held under a variety of tenure arrangements or volume allotments; for example, unregulated tenure (timber licence, timber berth) in British Columbia. (3)
PRIVATE LAND	**Industrial land**	Land owned by a large corporate industry for commercial forestry purposes. (2)
	Nonindustrial land	Land owned by corporations or individuals that may or may not be used for commercial forestry purposes. (2) These corporations may include churches, municipalities, villages, townships, companies, limited partnerships, organizations, and associations.
FEDERAL LAND	**Indian land**	Lands within Indian reserves or Indian settlements. (2)
	National parks	
	Other federal land	Other Crown land within the jurisdiction of the federal government. Includes lands held by National Defense, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transportation, and Crown Corporations. (2)

TREATMENT: SITE PREPARATION

Site preparation is a mechanical, fire, chemical, or hand treatment that modifies the site to provide favorable conditions for natural or artificial regeneration. (1)

Prescribed burning	The knowledgeable application of fire to a specific land area to accomplish predetermined objectives of forest management or other land use.
Mechanical treatment	Includes scarification, lopping and scattering, and crushing and windrowing.
Chemical treatment	The application of any chemical preparation used to kill or inhibit the growth of forbs, grasses, and woody plants, and their seeds. (4)

TERMINOLOGY (concluded)

TREATMENT: STAND TENDING

Stand tending is generally any operation carried out for the benefit of a forest crop or an individual thereof, at any stage of its life; covers operations both on the crop itself, e.g., thinnings and improvement cuttings, and on competing vegetation, e.g., weeding, cleaning, and girdling of unwanted growth, but not regeneration cuttings or site preparation. (4)

Weeding — A release treatment in stands during the seedling stage that eliminates or suppresses undesirable vegetation regardless of crown position. (5) It includes mechanical, chemical, and manual treatments. (1)

Cleaning — A release treatment made in a stand not past the sapling stage to free the favored trees from less desirable species of the same age which overtop them or are likely to do so. (4) It includes mechanical, chemical and manual treatments. (1)

Thinning — A cutting made in an immature crop or stand in order primarily to accelerate diameter increment but also, by suitable selection, to improve the average form of the trees that remain. (4) It includes precommercial and commercial thinning.

Defined in Nova Scotia as a spacing operation designed primarily to assist recovery of stands from possible mortality and to improve growth, quality, and percentage of desirable trees.

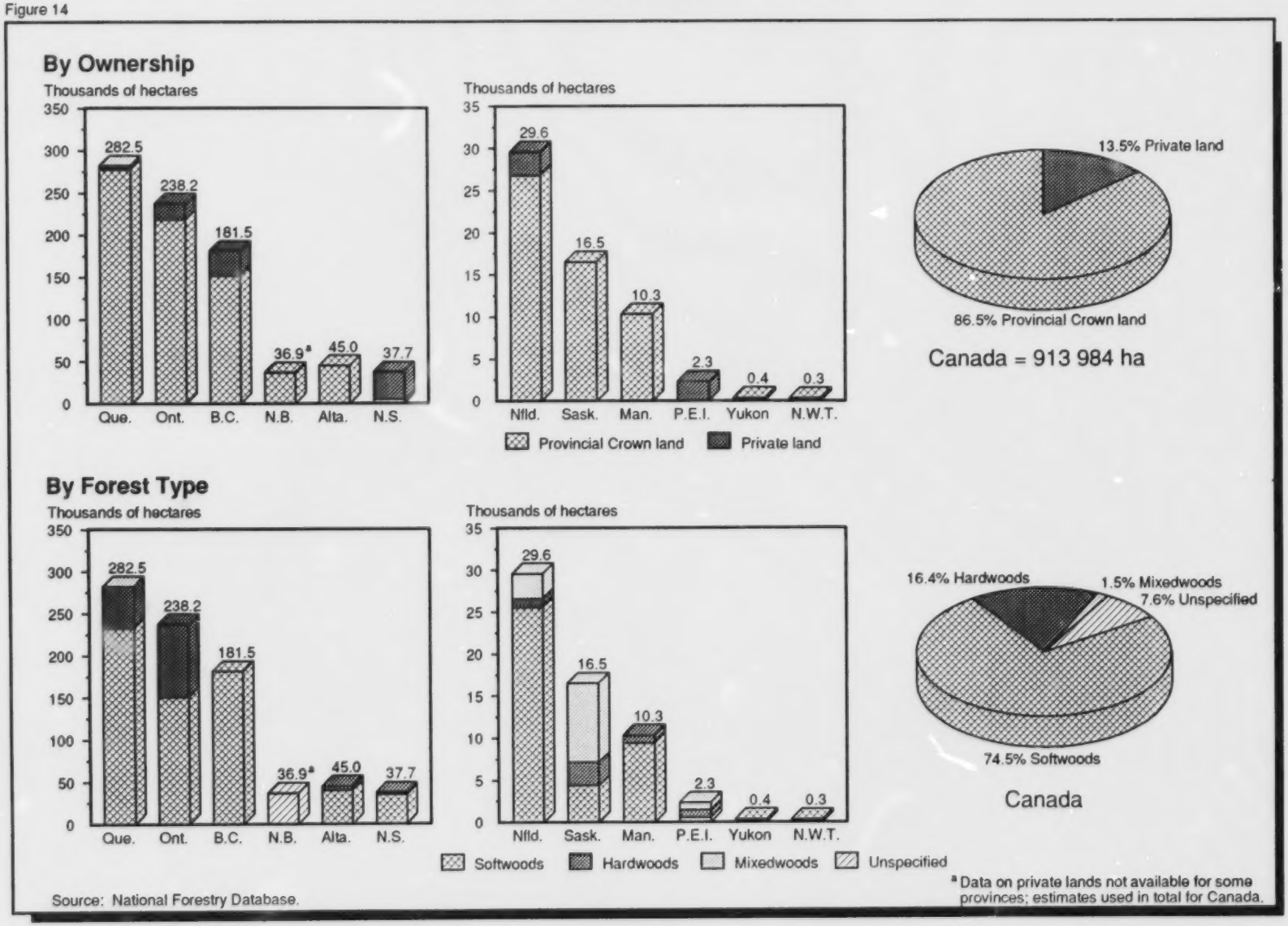
Fertilizing — The application of chemical or organic fertilizers with the objective of increasing the unit area soil productivity. (4)

Pruning — The removal of live or dead branches from standing trees by natural or artificial means. (1)

Draining — The process of removal of water from soil, particularly by surface run-off and subsurface percolation and artificially by measures for hastening removal, e.g., by ditching.

AREA HARVESTED - 1990

Figure 14



Source: National Forestry Database.

[a] Data on private lands not available for some provinces; estimates used in total for Canada.

4.1 Area Harvested by Ownership, Harvesting Method, Forest Type, and Province/Territory, 1990

(Hectares)

Harvesting method/ forest type	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Clearcut														
Softwood forest	1990	22 800*	40*	4 170*	25 830	224 460*	150 167	9 424	4 372	40 000*	..	366*	325	..
Hardwood forest	1990	1 000*	-	630*	750	-	57 418	925	2 770	5 000*	..	-	-	..
Mixedwood forest	1990	3 000*	-	..	7 375	-	..	..	9 396	..	..	-	-	..
Total	1990	26 800*	40*	4 800*	33 955	224 460	207 585	10 349	16 538	45 000*	116 088	366*	325	**686 306***
Partial cut														
Softwood forest	1990	-	-	64	-	5 990*	76	..	-	-	..	-	-	..
Hardwood forest	1990	-	-	-	1 100	47 490*	11 561	..	-	-	..	-	-	..
Mixedwood forest	1990	-	-	..	1 845	-	..	..	-	-	..	-	-	..
Total	1990	-	-	64	2 945	53 480	11 637	..	-	-	35 920	-	-	**104 046**
Total harvest														
Softwood forest	1990	22 800*	40*	4 234*	25 830	230 450*	150 243	9 424	4 372	40 000*	..	366*	325	..
Hardwood forest	1990	1 000*	-	630*	1 850	47 490*	68 979	925	2 770	5 000*	..	-	-	..
Mixedwood forest	1990	3 000*	-	..	9 220	-	..	..	9 396	..	..	-	-	..
Total	1990	26 800*	40*	4 864*	36 900	277 940	219 222	10 349	16 538	45 000*	152 008	366*	325	**790 352***
B. Private land														
Clearcut														
Softwood forest	1990	2 800*	560*	30 200*	..	912	909	..	-	..	..	..	..	..
Hardwood forest	1990	-	300*	2 200*	..	43	1 013	..	-	..	..	..	..	..
Mixedwood forest	1990	-	-	..	..	209	..	..	-	..	..	..	..	..
Total	1990	2 800*	860*	32 400*	..	1 164	1 922	..	-	..	29 518	..	..	..
Partial cut														
Softwood forest	1990	-	-	378	..	1 597	135	..	-	-	..	..	..	..
Hardwood forest	1990	-	577*	38*	..	1 726	16 934	..	-	-	..	..	..	..
Mixedwood forest	1990	-	840*	..	..	38	..	..	-	-	..	..	..	..
Total	1990	-	1 417*	416	..	3 361	17 069	..	-	-	-	..	..	..
Total harvest														
Softwood forest	1990	2 800*	560*	30 578*	..	2 509	1 044	..	-	..	..	..	..	..
Hardwood forest	1990	-	877*	2 238*	..	1 769	17 947	..	-	..	..	..	..	..
Mixedwood forest	1990	-	840*	..	..	247	..	..	-	..	..	..	..	..
Total	1990	2 800*	2 277*	32 816*	..	4 525	18 991	..	-	..	29 518	..	..	..

4.1 Area Harvested by Ownership, Harvesting Method, Forest Type, and Province/Territory, 1990 (continued)

(Hectares)

Harvesting method/ forest type	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
C. Provincial and private lands														
Clearcut														
Softwood forest	1990	25 600°	600°	34 370°	..	225 372°	151 076	9 424	4 372	40 000°	..	366°	325	..
Hardwood forest	1990	1 000°	300°	2 830°	..	43	58 431	925	2 770	5 000°	..	-	-	..
Mixedwood forest	1990	3 000°	-	..	..	209	..	..	9 396	..	..	-	-	..
Total	1990	29 600°	900°	37 200°	..	225 624	209 507	10 349	16 538	45 000°	145 606	366°	325	..
Partial cut														
Softwood forest	1990	-	-	442	..	7 587°	211	..	-	-	..	-	-	..
Hardwood forest	1990	-	577°	38°	..	49 216°	28 495	..	-	-	..	-	-	..
Mixedwood forest	1990	-	840°	..	..	38	..	..	-	-	..	-	-	..
Total	1990	-	1 417°	480	..	56 841	28 706	..	-	-	35 920	-	-	..
Total harvest														
Softwood forest	1990	25 600°	600°	34 812°	..	232 959°	151 287	9 424	4 372	40 000°	..	366°	325	..
Hardwood forest	1990	1 000°	877°	2 868°	..	49 259°	86 926	925	2 770	5 000°	..	-	-	..
Mixedwood forest	1990	3 000°	840°	..	..	247	..	..	9 396	..	..	-	-	..
Total	1990	29 600°	2 317°	37 680°	..	282 465	238 213	10 349	16 538	45 000°	181 526	366°	325	..
D. Federal land														
Partial cut														
Hardwood forest	1990	..	..	..	..	5	..	..	..	..	..	...	...	..
Total	1990	..	..	..	..	5	..	..	..	..	..	...	...	..
Total harvest														
Hardwood forest	1990	..	..	..	..	5	..	..	..	..	..	...	...	..
Total	1990	..	..	..	..	5	..	..	..	..	..	...	...	..
E. Total														
Clearcut														
Softwood forest	1990	25 600°	600°	34 370°	..	225 372°	151 076	9 424	4 372	40 000°	..	366°	325	..
Hardwood forest	1990	1 000°	300°	2 830°	..	43	58 431	925	2 770	5 000°	..	-	-	..
Mixedwood forest	1990	3 000°	-	..	..	209	..	..	9 396	..	..	-	-	..
Total	1990	29 600°	900°	37 200°	..	225 624	209 507	10 349	16 538	45 000°	145 606	366°	325	..
Partial cut														
Softwood forest	1990	-	-	442	..	7 587°	211	..	-	-	..	-	-	..
Hardwood forest	1990	-	577°	38°	..	49 221°	28 495	..	-	-	..	-	-	..
Mixedwood forest	1990	-	840°	..	..	38	..	..	-	-	..	-	-	..
Total	1990	-	1 417°	480	..	56 846	28 706	..	-	-	35 920	-	-	..

4.1 Area Harvested by Ownership, Harvesting Method, Forest Type, and Province/Territory, 1990 (concluded)

(Hectares)

Harvesting method/ forest type	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
Total harvest														
Softwood forest	1990	25 600*	600*	34 812*	..	232 959*	151 287	9 424	4 372	40 000*	..	366*	325	..
Hardwood forest	1990	1 000*	877*	2 868*	..	49 264*	86 926	925	2 770	5 000*	..	-	-	..
Mixedwood forest	1990	3 000*	840*	..	..	247	..	..	9 396	..	..	-	-	..
Total	1990	29 600*	2 317*	37 680*	..	282 470	238 213	10 349	16 538	45 000*	181 526	366*	325	..

Note - P.E.I. 1990 The area harvested on provincial Crown land is estimated from harvest volumes which are accurately recorded. The area harvested on private land is estimated from harvest volumes which are obtained by survey.

N.S. 1990 The area harvested on provincial and private lands does not include an estimated 576 000 m^3 of fuelwood/firewood harvested.

Que. 1990 The area harvested is not recorded as softwood, hardwood, and mixedwood forest types. However, most harvests are associated with softwoods, especially on Crown forests.

Ont. 1990 The figures for clearcuts on provincial and private lands include a small amount of partial cut not available separately.

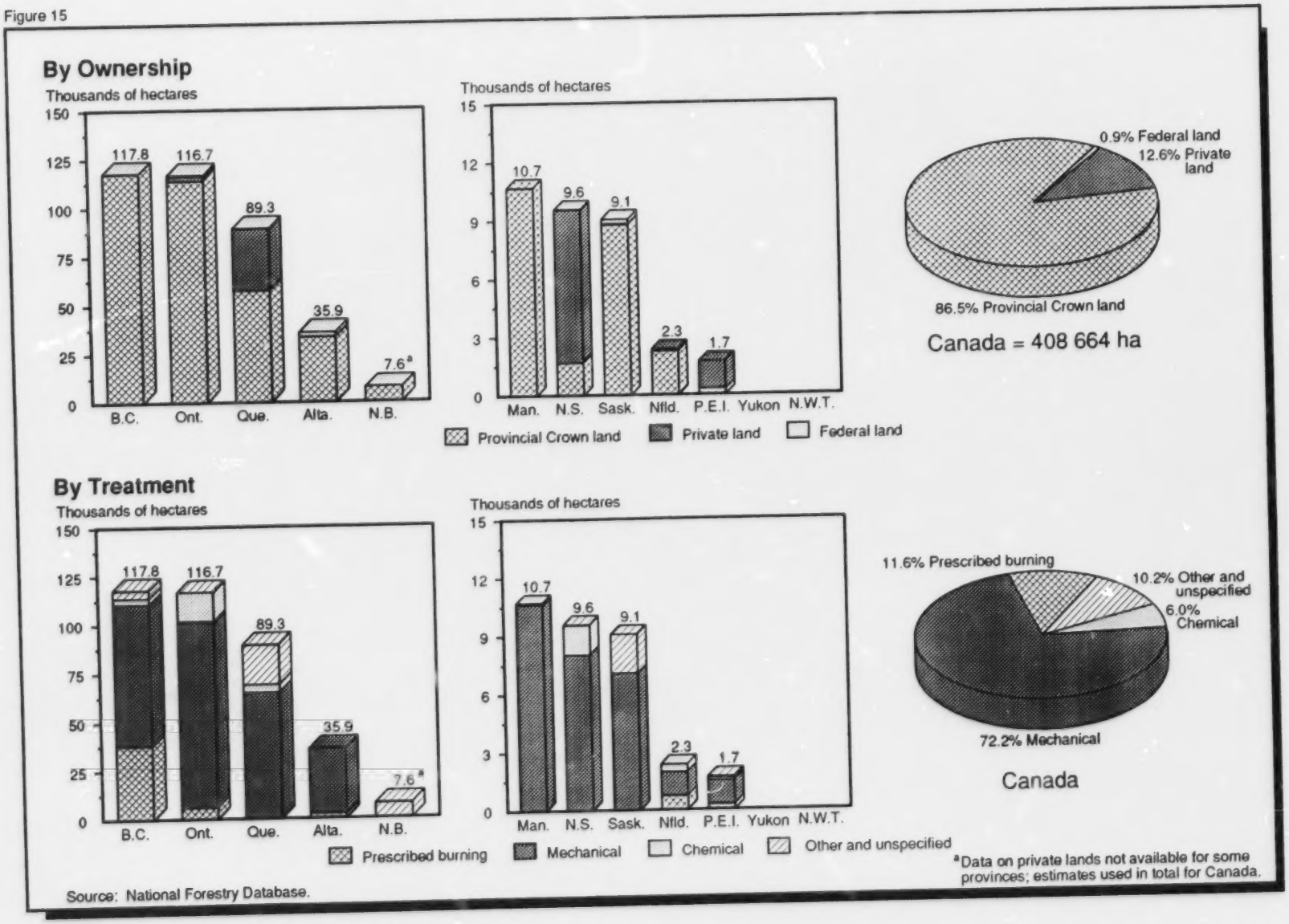
Man. 1990 The figures for clearcuts on provincial and private lands include a small amount of partial cut not available separately.

Yukon 1990 Estimates of the area harvested on provincial and private lands are based on the volume permitted/cut. Much of the firewood volume is from fire-killed or standing dead trees and does not actually involve a clearcut. In this context, the area is estimated as if clearcutting took place.

Source: National Forestry Database.

AREA OF SITE PREPARATION - 1990

Figure 15



Source: National Forestry Database.

4.2 Area of Site Preparation by Ownership, Treatment, and Province/Territory, 1990

(Hectares)

Treatment	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Prescribed burning[a]	1990	739	45	-	-	-	6 166	-	-	-	37 772[e]	-	-	**44 722[e]**
Mechanical treatment[b]	1990	1 215	239	1 402	7 405	51 070[e]	93 525	10 645	6 785	33 478	72 816[e]	-	-	**278 580[e]**
Chemical treatment	1990	298	19	278	120	1 125	14 176	55	-	-	3 182[e]	-	-	**19 253[e]**
Other	1990	-	-	-	-	5 140[e]	-	-	2 006	-	3 922[e]	-	-	**11 068[e]**
Total	1990	2 252	304	1 680	7 525	57 335	113 867	10 700	8 791	33 478	117 692[e]	-	-	**353 624[e]**
B. Private land														
Prescribed burning[a]	1990	-	237	-	..	63	-	-	-	..	..	..	..	..
Mechanical treatment[b]	1990	-	984	6 627	..	13 622[e]	1 630	..	25	..	..	..	..	..
Chemical treatment	1990	78	147	1 255	..	2 947	877	..	-	..	..	..	..	..
Other	1990	-	39	-	..	15 105[e]	-	..	-	..	..	..	..	..
Total	1990	78	1 407	7 882	..	31 737	2 507	..	25	..	..	..	..	..
C. Provincial and private lands														
Prescribed burning[a]	1990	739	283	-	..	63	6 166	-	-	-	37 772[e]	-	-	..
Mechanical treatment[b]	1990	1 215	1 223	8 029	..	64 692[e]	95 155	10 645	6 810	33 478	72 816[e]	-	-	..
Chemical treatment	1990	376	166	1 533	..	4 072	15 053	55	-	-	3 182[e]	-	-	..
Other	1990	-	39	-	..	20 245[e]	-	-	2 006	-	3 922[e]	-	-	..
Total	1990	2 330	1 710	9 562	..	89 072	116 374	10 700	8 816	33 478	117 692[e]	-	-	..
D. Federal land														
Prescribed burning[a]	1990	-	-	-	43	-	-	-	-	2 400	..	...	...	..
Mechanical treatment[b]	1990	-	-	..	56	272	301	-	252	-	..	...	...	..
Chemical treatment	1990	-	-	..	20	-	63	-	-	-	..	...	...	..
Other	1990	-	-	-	-	-	3	-	-	-	...	...	...	**3**
Total	1990	-	-	12	119	272	367	-	252	2 400	107	...	...	**3 529**
E. Total														
Prescribed burning[a]	1990	739	283	-	..	63	6 166	-	-	2 400	..	-	-	..
Mechanical treatment[b]	1990	1 215	1 223	..	..	64 964[e]	95 456	10 645	7 062	33 478	..	-	-	..
Chemical treatment	1990	376	166	..	..	4 072	15 116	55	-	-	..	-	-	..
Other	1990	-	39	-	..	20 245[e]	3	-	2 006	-	3 922[e]	-	-	..
Total	1990	2 330	1 710	9 574	..	89 344	116 741	10 700	9 068	35 878	117 799[e]	-	-	..

[a]Prescribed burning, as a means of site preparation only, does not include hazard abatement.
[b]Mechanical treatment includes scarification, lopping and scattering, and crushing and windrowing.

4.2 Area of Site Preparation by Ownership, Treatment, and Province/Territory, 1990 (concluded)
(Hectares)

Treatment	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada

Note - P.E.I. 1990 For provincial and private lands, all burning is of slash piles created by mechanical piling. Approximately 450 ha of the mechanical treatment is a second treatment.
"Other" on private land comprises manual treatment (35 ha) and residual removal (4 ha).

Que. 1990 The figures for private land include only work subsidized by government programs (the forest resource development program of the Ministère des Forêts du Québec and the Eastern Quebec forestry program funded by Forestry Canada).
"Other" on provincial Crown land comprises mixed methods (4 430 ha) and plowing-harrowing (710 ha). "Other" on private land comprises manual treatment (954 ha), mixed methods (13 204 ha), and plowing-harrowing (947 ha).
Prescribed burning, herbicide application, and mixed methods are often practiced on a portion of the area indicated under mechanical treatment and plowing-harrowing.
Mechanical treatment on provincial Crown land includes manual treatment. The proportion is not known.
Mixed methods treatments are done mechanically but also manually. The proportion is not known.

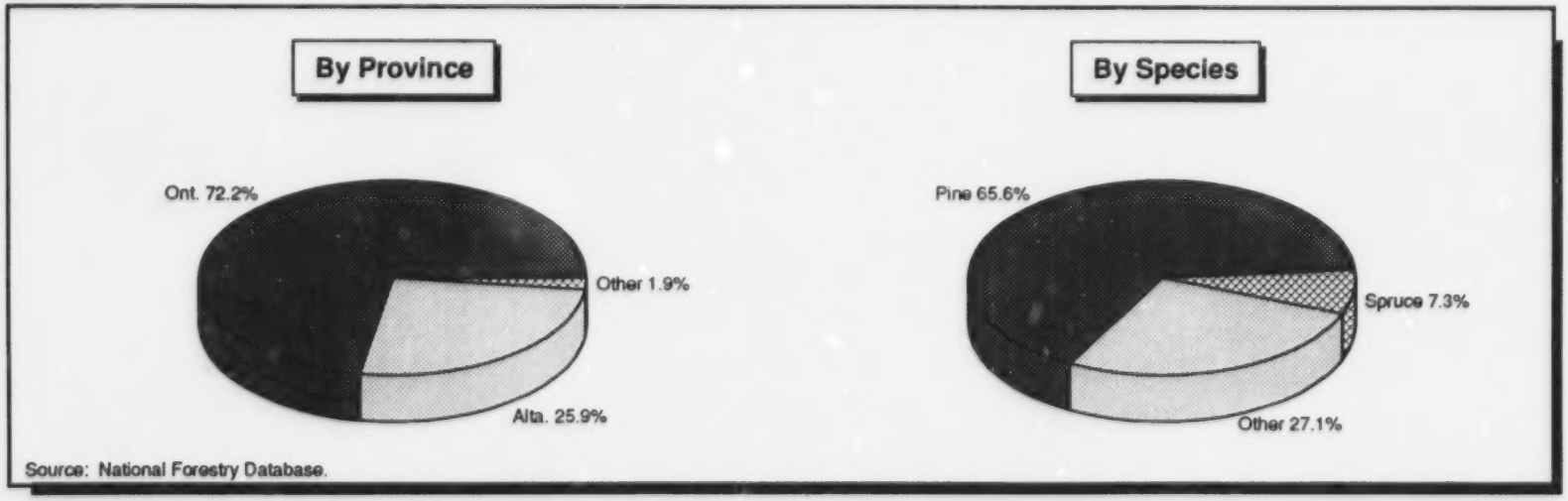
Sask. 1990 "Other" on provincial Crown land comprises windrow and disk trench treatments.

B.C. 1990 "Other" on provincial Crown land comprises mistletoe control, cabling, and knockdown of trees more than 3 m tall. "Other" does not include site rehabilitation.

Source: National Forestry Database.

Figure 16

AREA OF DIRECT SEEDING - 1990



Source: National Forestry Database.

4.3 Area of Direct Seeding by Ownership, Species, and Province/Territory, 1990

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Jack pine	1990	-	-	-	34	-	23 856	2	645	-	-	-	-	**24 537**
Miscellaneous pines	1990	-	-	-	-	-	35	-	-	-	-	-	-	**35**
Total	1990	-	-	-	34	-	23 891	2	645	-	-	-	-	**24 572**
Black spruce	1990	-	-	-	-	-	-	1	-	-	-	-	-	**1**
White spruce	1990	-	-	-	30	-	-	2	-	-	-	-	-	**32**
Miscellaneous spruces	1990	-	-	-	-	-	2 706	-	-	-	-	-	-	**2 706**
Total	1990	-	-	-	30	-	2 706	3	-	-	-	-	-	**2 739**
Miscellaneous species	1990	-	-	-	5	-	405	-	-	9 690	-	-	-	**10 100**
Total	1990	-	-	-	69	-	27 002	5	645	9 690	-	-	-	**37 411**
B. Private land	1990	..	..	..	..	..	..	..	..	..	..	..	..	**..**
C. Provincial and private lands														
Jack pine	1990	-	-	-	34	-	23 856	2	645	-	-	-	-	**24 537**
Miscellaneous pines	1990	-	-	-	-	-	35	-	-	-	-	-	-	**35**
Total	1990	-	-	-	34	-	23 891	2	645	-	-	-	-	**24 572**
Black spruce	1990	-	-	-	-	-	-	1	-	-	-	-	-	**1**
White spruce	1990	-	-	-	30	-	-	2	-	-	-	-	-	**32**
Miscellaneous spruces	1990	-	-	-	-	-	2 706	-	-	-	-	-	-	**2 706**
Total	1990	-	-	-	30	-	2 706	3	-	-	-	-	-	**2 739**
Miscellaneous species	1990	-	-	-	5	-	405	-	-	9 690	-	-	-	**10 100**
Total	1990	-	-	-	69	-	27 002	5	645	9 690	-	-	-	**37 411**
D. Federal land														
Black spruce	1990	-	-	-	-	6	..	-	-	-	-	...	...	**..**
Total	1990	-	-	-	-	6	..	-	-	-	-	...	...	**..**
Miscellaneous species	1990	-	-	-	-	-	19	-	-	-	-	...	...	**19**
Total	1990	-	-	-	-	6	19	-	-	-	-	...	...	**25**

4.3 Area of Direct Seeding by Ownership, Species, and Province/Territory, 1990 (concluded)

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
E. Total														
Jack pine	1990	-	-	-	34	-	23 856	2	645	-	-	-	-	24 537
Miscellaneous pines	1990	-	-	-	-	-	35	-	-	-	-	-	-	35
Total	1990	-	-	-	34	-	23 891	2	645	-	-	-	-	24 572
Black spruce	1990	-	-	-	-	6	-	1	-	-	-	-	-	7
White spruce	1990	-	-	-	30	-	-	2	-	-	-	-	-	32
Miscellaneous spruces	1990	-	-	-	-	-	2 706	-	-	-	-	-	-	2 706
Total	1990	-	-	-	30	6	2 706	3	-	-	-	-	-	2 745
Miscellaneous species	1990	-	-	-	5	-	424	-	-	9 690	-	-	-	10 119
Total	1990	-	-	-	69	6	27 021	5	645	9 690	-	-	-	37 436

Note - N.B. 1990 "Miscellaneous species" on provincial Crown land comprises balsam fir.

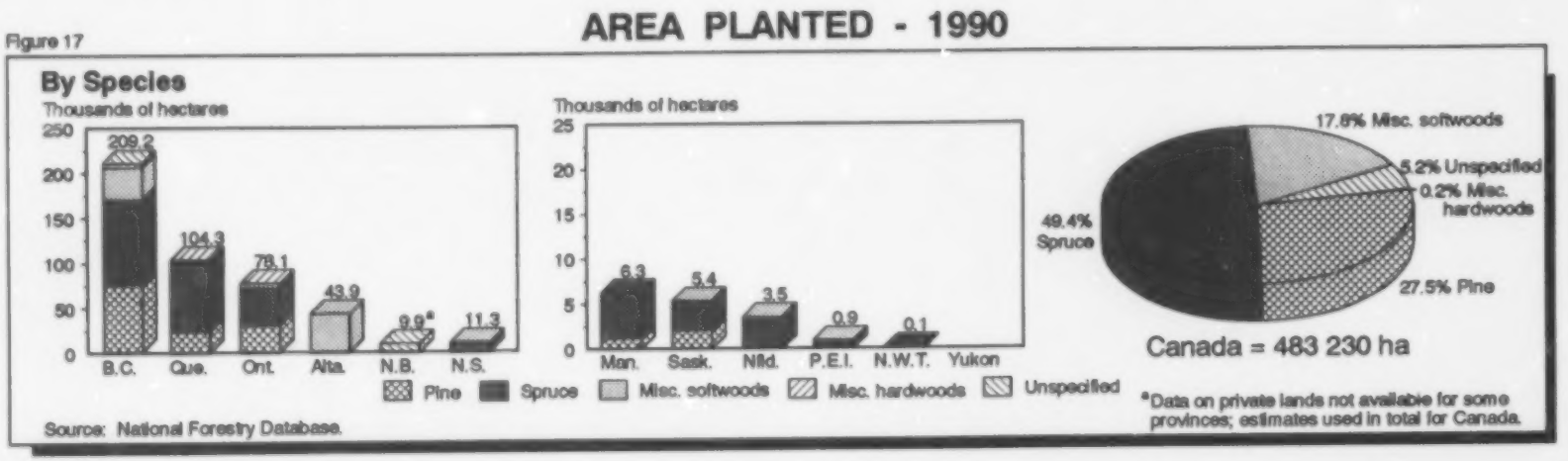
Que. 1990 Data are not available. A forest engineer's survey indicates that if there was seeding on provincial Crown land or on private land, it would be marginal and with jack pine.

Ont. 1990 "Miscellaneous pine" on provincial Crown land comprises white pine and "miscellaneous spruce" comprises all spruces. "Miscellaneous species" on provincial Crown land comprises all softwoods.

Alta. 1990 "Miscellaneous species" on provincial Crown land comprises lodgepole pine and white spruce.

Source: National Forestry Database.

Figure 17



4.4 Area Planted by Ownership, Species, and Province/Territory, 1990

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Eastern white pine	1990	-	4	-	-	912*	3 094	-	-	-	-	-	-	**4 010***
Red pine	1990	98	16	-	-	249*	1 731	284	-	-	-	-	-	**2 378***
Jack pine	1990	135	-	-	2 282	16 617*	22 332	942	1 937	-	-	-	10	**44 255***
Lodgepole pine	1990	-	-	-	-	-	-	-	119	-	74 306*	-	-	**74 425***
Miscellaneous pines	1990	-	-	2*	-	-	-	-	-	-	-	-	-	**2***
Red spruce	1990	-	-	-	-	615*	-	-	-	-	-	-	-	**615***
Norway spruce	1990	-	-	-	-	2 016*	-	-	-	-	-	-	-	**2 016***
Engelmann spruce and white spruce	1990	-	-	-	-	-	-	-	-	-	95 321*	-	-	**95 321***
Black spruce	1990	2 003	30	-	5 245	43 885*	-	3 487	-	-	-	-	-	**54 650***
White spruce	1990	743	10	-	807	7 481*	-	1 564	3 261	-	-	-	70	**13 936***
Miscellaneous spruces	1990	-	-	3 054*	-	-	40 881	-	-	-	-	-	-	**43 935***
Balsam fir	1990	-	3	-	135	-	-	-	-	-	-	-	-	**138**
Douglas-fir	1990	-	-	-	-	-	-	-	-	-	16 692*	-	-	**16 692***
Eastern larch	1990	-	29	-	-	-	-	-	-	-	-	-	-	**29**
Japanese larch	1990	55	-	-	-	-	-	-	-	-	-	-	-	**55**
Lodgepole pine and white spruce	1990	-	-	-	-	-	-	-	-	43 862	-	-	-	**43 862**
Miscellaneous softwoods	1990	-	-	-	1 415	534*	3 091	-	-	-	17 958*	-	-	**22 998***
Miscellaneous hardwoods	1990	-	-	-	-	269*	63	-	-	-	-	-	-	**332***
Total	1990	3 034	92	3 056	9 884	72 580	71 192	6 277	5 317	43 862	204 276*	-	80	**419 650***
B. Private land														
Eastern white pine	1990	-	46	-	..	546*	2 585	..	-	..	..	..	..	..
Red pine	1990	-	158	-	..	1 624*	595	..	-	..	..	..	..	..
Jack pine	1990	-	-	-	..	3 802*	86	..	1	..	..	..	..	..
Scots pine	1990	-	-	-	..	-	-	..	20	..	..	..	..	..
Austrian pine	1990	-	28	-	..	-	-	..	-	..	..	..	..	..
Miscellaneous pines	1990	-	-	624*	..	-	-	..	-	..	..	..	..	..
Red spruce	1990	-	-	-	..	1 993*	-	..	-	..	..	..	..	..
Norway spruce	1990	-	-	-	..	4 233*	-	..	-	..	..	..	..	..
Black spruce	1990	452	270	-	..	7 230*	-	..	-	..	..	..	..	..
White spruce	1990	62	119	-	..	10 829*	-	..	4	..	..	..	..	..
Miscellaneous spruces	1990	-	-	7 370*	..	-	1 544	..	-	..	..	..	..	..
Balsam fir	1990	-	50	-	..	-	-	..	-	..	..	..	..	..
Miscellaneous firs	1990	-	-	98*	..	-	-	..	-	..	..	..	..	..
Eastern larch	1990	-	143	-	..	-	-	..	-	..	..	..	..	..
Miscellaneous softwoods	1990	-	-	100*	..	374*	1 201	..	-	..	..	..	..	..
Miscellaneous hardwoods	1990	-	-	-	..	328*	454	..	-	..	..	..	..	..
Total	1990	514	814	8 192	..	30 959*	6 464	..	25	..	4 559*	..	..	..

4.4 Area Planted by Ownership, Species, and Province/Territory, 1990 (continued)

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
C. Provincial and private lands														
Eastern white pine	1990	-	50	-	..	1 458*	5 678	-	-	-	..	-	-	..
Red pine	1990	98	174	-	..	1 873*	2 327	284	-	-	..	-	-	..
Jack pine	1990	135	-	-	..	20 419*	22 418	942	1 938	-	..	-	10	..
Lodgepole pine	1990	-	-	-	..	-	-	-	119	-	..	-	-	..
Scots pine	1990	-	-	-	..	-	-	-	20	-	..	-	-	..
Austrian pine	1990	-	28	-	..	-	-	-	-	-	..	-	-	..
Miscellaneous pines	1990	-	-	626*	..	-	-	-	-	-	..	-	-	..
Red spruce	1990	-	-	-	..	2 608*	-	-	-	-	..	-	-	..
Norway spruce	1990	-	-	-	..	6 251*	-	-	-	-	..	-	-	..
Black spruce	1990	2 455	300	-	..	51 115*	-	3 487	-	-	..	-	-	..
White spruce	1990	805	129	-	..	18 310*	-	1 564	3 265	-	..	-	70	..
Miscellaneous spruces	1990	-	-	10 424*	..	-	42 425	-	-	-	..	-	-	..
Balsam fir	1990	-	53	-	..	-	-	-	-	-	..	-	-	..
Miscellaneous firs	1990	-	-	98*	..	-	-	-	-	-	..	-	-	..
Eastern larch	1990	-	172	-	..	-	-	-	-	-	..	-	-	..
Japanese larch	1990	55	-	-	..	-	-	-	-	-	..	-	-	..
Lodgepole pine and white spruce	1990	-	-	-	..	-	-	-	-	43 862	..	-	-	..
Miscellaneous softwoods	1990	-	-	100*	..	908*	4 292	-	-	-	..	-	-	..
Miscellaneous hardwoods	1990	-	-	-	..	597*	517	-	-	-	..	-	-	..
Total	1990	3 548	906	11 248	..	103 539*	77 656	6 277	5 342	43 862	208 835*	-	80	..
D. Federal land														
Eastern white pine	1990	-	-	-	3	-	-	-	-	-	-	...	...	**3**
Miscellaneous softwoods	1990	-	-	7	43	784	442	-	25	-	333	...	...	**1 634**
Total	1990	-	-	7	46	784	442	-	25	-	333	...	...	**1 637**
E. Total														
Eastern white pine	1990	-	50	-	..	1 458*	5 678	-	-	-	..	-	-	..
Red pine	1990	98	174	-	..	1 873*	2 327	284	-	-	..	-	-	..
Jack pine	1990	135	-	-	..	20 419*	22 418	942	1 938	-	..	-	10	..
Lodgepole pine	1990	-	-	-	..	-	-	-	119	-	..	-	-	..
Scots pine	1990	-	-	-	..	-	-	-	20	-	..	-	-	..
Austrian pine	1990	-	28	-	..	-	-	-	-	-	..	-	-	..
Miscellaneous pines	1990	-	-	626*	..	-	-	-	-	-	..	-	-	..
Red spruce	1990	-	-	-	..	2 608*	-	-	-	-	..	-	-	..
Norway spruce	1990	-	-	-	..	6 251*	-	-	-	-	..	-	-	..
Black spruce	1990	2 455	300	-	..	51 115*	-	3 487	-	-	..	-	-	..
White spruce	1990	805	129	-	..	18 310*	-	1 564	3 265	-	..	-	70	..
Miscellaneous spruces	1990	-	-	10 424*	..	-	42 425	-	-	-	..	-	-	..
Balsam fir	1990	-	53	-	..	-	-	-	-	-	..	-	-	..

4.4 Area Planted by Ownership, Species, and Province/Territory, 1990 (concluded)

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
Miscellaneous firs	1990	-	-	98*	..	-	-	-	-	-	..	-	-	..
Eastern larch	1990	-	172	-	..	-	-	-	-	-	..	-	-	..
Japanese larch	1990	55	-	-	..	-	-	-	-	-	..	-	-	..
Lodgepole pine and white spruce	1990	-	-	-	..	-	-	-	-	43 862	..	-	-	..
Miscellaneous softwoods	1990	-	-	107*	..	1 692*	4 734	-	-	-	..	-	-	..
Miscellaneous hardwoods	1990	-	-	-	..	597*	517	-	-	-	..	-	-	..
Total	1990	3 548	906	11 255	..	104 323*	78 098	6 277	5 367	43 862	209 168*	-	80	..

Note - N.S. 1990 Area planted by species on provincial and private lands is estimated from total area planted by tenure, from stock production, and from shipping records.

N.B. 1990 "Miscellaneous softwoods" on provincial Crown land comprises Norway spruce, red pine, white pine, larch and eastern cedar.

Que. 1990 "Miscellaneous softwoods" on provincial and private lands comprises eastern larch (provincial Crown land, 936 000 seedlings planted on 428 ha; private land, 917 000 seedlings planted on 365 ha).

Ont. 1990 Some 13.3 million trees were sold to private landowners: hardwoods (1 132 135), jack pine (170 155), red pine (1 432 805), white pine (2 997 315), spruce (5 343 627), and other conifers (2 229 665). The area planted to each species is not known.

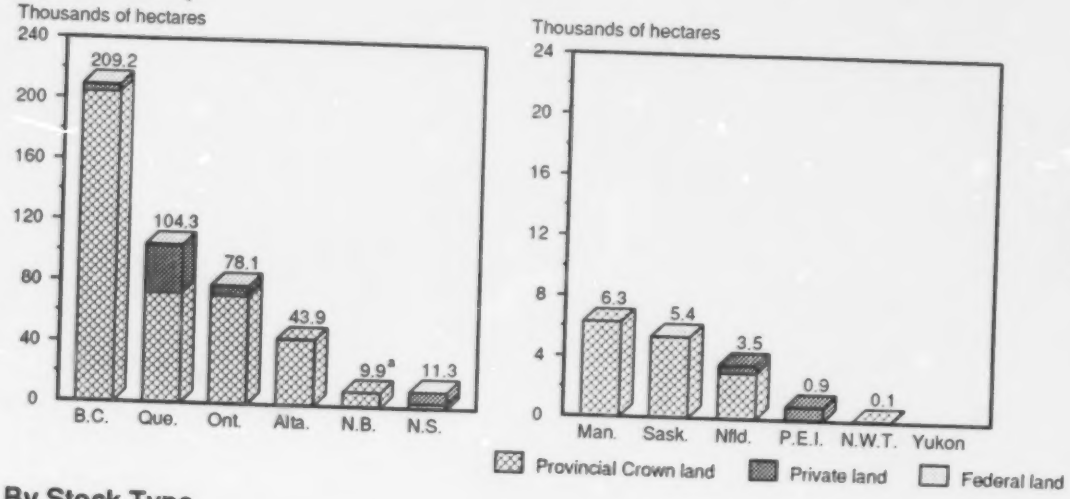
B.C. 1990 "Miscellaneous softwoods" on provincial Crown land comprises western red cedar, cypress, alpine fir, amabalis fir, grand fir, mountain hemlock, western hemlock, western larch, western white pine, yellow pine, and Sitka spruce.

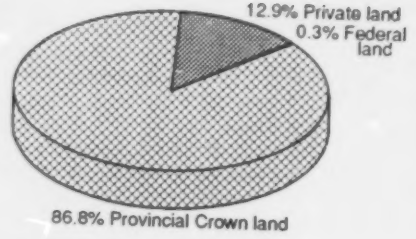
Source: National Forestry Database.

Figure 18

AREA PLANTED - 1990

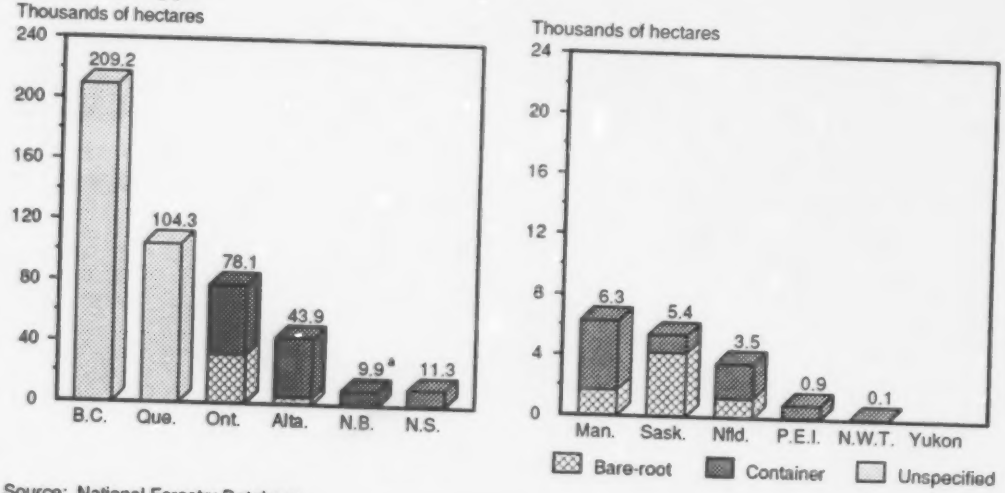
By Ownership

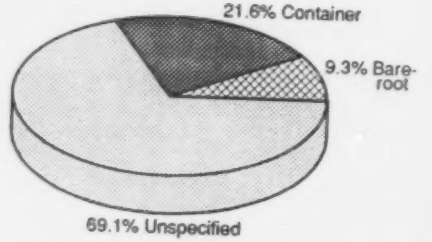




Canada = 483 230 ha

By Stock Type





Canada

Source: National Forestry Database.

[a] Data on private lands not available for some provinces; estimates used in total for Canada.

4.5 Area Planted by Ownership, Stock Type, and Province/Territory, 1990

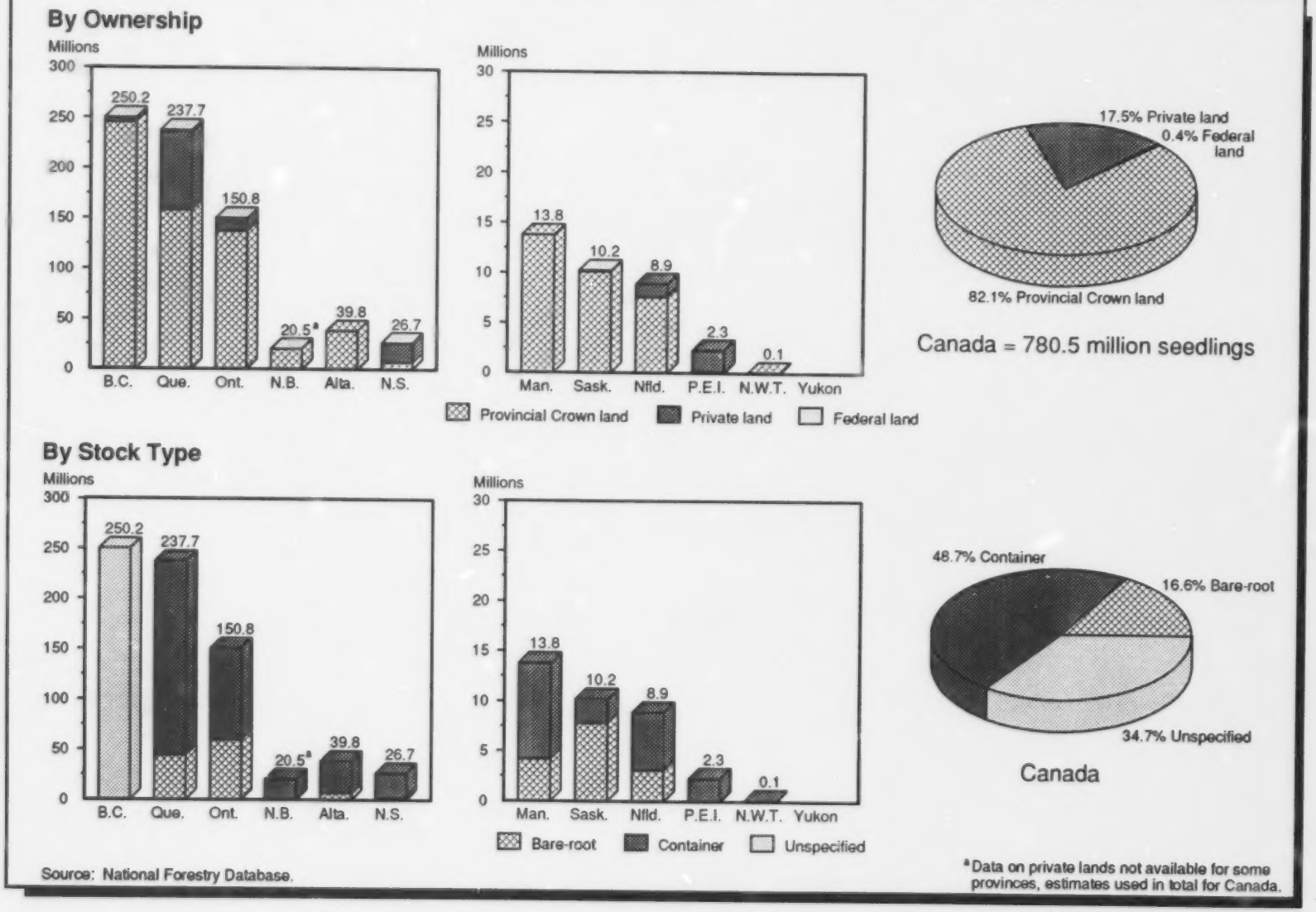
(Hectares)

Stock type	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Bare-root	1990	1 080	-	30	352	..	25 642	1 669	4 189	4 691	..	-	..	..
Container	1990	1 954	92	3 026	9 532	..	45 550	4 608	1 127	39 171	..	-	80	..
Total	1990	3 034	92	3 056	9 884	72 580	71 192	6 277	5 317	43 862	204 276*	-	80	419 650*
B. Private land														
Bare-root	1990	160	-	1 115	..	..	6 321	..	5	..	..	..	..	..
Container	1990	354	814	7 077	..	..	143	..	20	..	..	..	..	..
Total	1990	514	814	8 192	..	30 959*	6 464	..	25	..	4 559*	..	..	..
C. Provincial and private lands														
Bare-root	1990	1 240	-	1 145	..	..	31 963	1 669	4 194	4 691	..	-	..	..
Container	1990	2 308	906	10 103	..	..	45 693	4 608	1 147	39 171	..	-	80	..
Total	1990	3 548	906	11 248	..	103 539*	77 656	6 277	5 342	43 862	208 835*	-	80	..
D. Federal land														
Bare-root	1990	-	-	..	..	100	..	-	..	-	..	...	...	..
Container	1990	-	-	..	..	684	..	-	..	-	..	...	...	..
Total	1990	-	-	7	46	784	442	-	25	-	333	...	...	1 637
E. Total														
Bare-root	1990	1 240	-	..	..	..	..	1 669	..	4 691	..	-	..	..
Container	1990	2 308	906	..	..	..	..	4 608	..	39 171	..	-	80	..
Total	1990	3 548	906	11 255	..	104 323*	78 098	6 277	5 367	43 862	209 168*	-	80	..

Source: National Forestry Database.

SEEDLINGS PLANTED - 1990

Figure 19



Source: National Forestry Database.

[a] Data on private lands not available for some provinces, estimates used in total for Canada.

4.6 Number of Seedlings Planted by Ownership, Stock Type, and Province/Territory, 1990

(Thousands of seedlings)

Stock type	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Bare-root seedlings	1990	2 700	-	85	727	18 430*	48 330	4 188	7 774	6 548	..	-	..	..
Container seedlings	1990	4 885	231	7 094	19 693	140 070*	89 639	9 584	2 329	33 260	..	-	104	..
Total planting	1990	7 585	231	7 179	20 420	158 500	137 969	13 773	10 104	39 808	245 595*	-	104	641 267*
B. Private land														
Bare-root seedlings	1990	400	-	2 598	..	25 896	11 506	..	11	..	..	..	..	..
Container seedlings	1990	885	2 035	16 954	..	51 501	255	..	45	..	..	..	..	..
Total planting	1990	1 285	2 035	19 552	..	77 397	11 761	..	56	..	4 189*	..	..	..
C. Provincial and private lands														
Bare-root seedlings	1990	3 100	-	2 683	..	44 325*	59 836	4 188	7 785	6 548	..	-	..	..
Container seedlings	1990	5 770	2 266	24 047	..	191 572*	89 894	9 584	2 374	33 260	..	-	104	..
Total planting	1990	8 870	2 266	26 730	..	235 897	149 730	13 773	10 160	39 808	249 784*	-	104	..
D. Federal land														
Bare-root seedlings	1990	-	-	..	..	263	..	-	..	-	..	...	...	..
Container seedlings	1990	-	-	..	..	1 589	..	-	..	-	..	...	...	..
Total planting	1990	-	-	18*	108*	1 852	1 044	-	62	-	446	...	...	3 529*
E. Total														
Bare-root seedlings	1990	3 100	-	..	..	44 588*	..	4 188	..	6 548	..	-	..	..
Container seedlings	1990	5 770	2 266	..	..	193 160*	..	9 584	..	33 260	..	-	104	..
Total planting	1990	8 870	2 266	26 748*	..	237 749	150 774	13 773	10 221	39 808	250 230*	-	104	..

Note - Que. 1990 The figures for private land only includes seedlings allocated through government programs (the forest resource development program of the Ministère des Forêts du Québec and the Eastern Quebec forestry program funded by Forestry Canada).

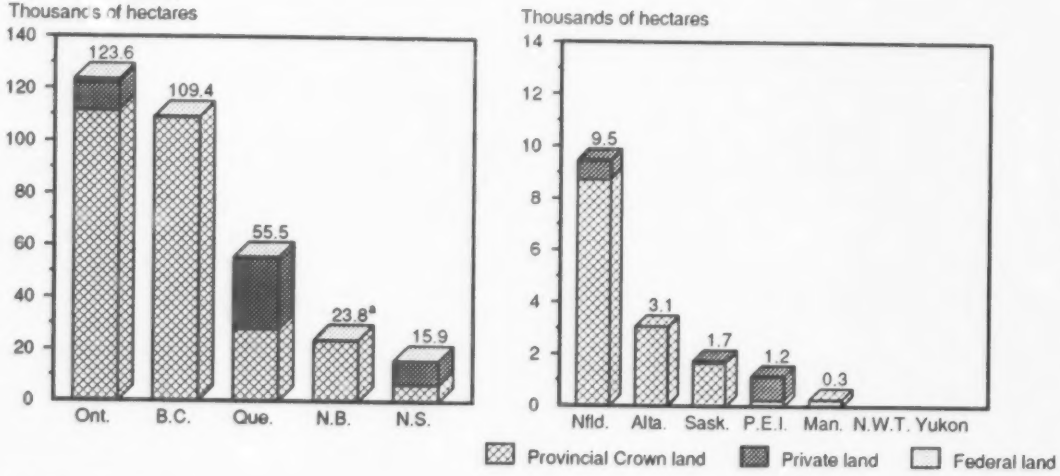
Ont. 1990 Some 13.3 million trees were sold to private landowners.

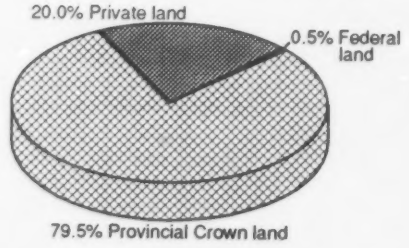
Source: National Forestry Database.

AREA OF STAND TENDING - 1990

Figure 20

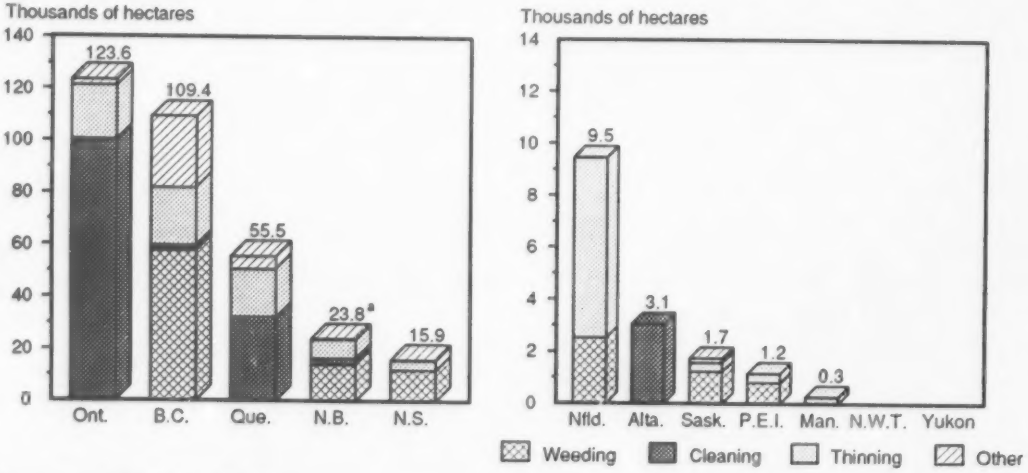
By Ownership

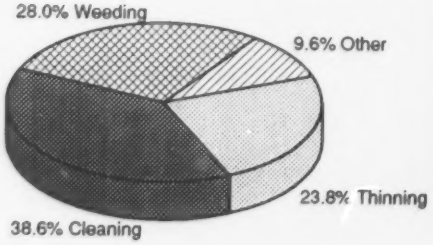




Canada = 367 902 ha

By Treatment





Canada

Source: National Forestry Database.

[a]Data on private lands not available for some provinces; estimates used in total for Canada.

4.7 Area of Stand Tending by Ownership, Treatment, and Province/Territory, 1990

(Hectares)

Treatment	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Weeding														
Mechanical	1990	-	-	-	-	-	-	-	143	-	-	-	-	**143**
Chemical	1990	2 460	51	4 586	14 014	-	-	256	-	-	34 270	-	-	**55 637**
Manual	1990	-	160	25	-	-	-	-	1 018	-	23 390	-	-	**24 593**
Total	1990	2 460	211	4 611	14 014	-	-	256	1 161	-	57 660	-	-	**80 373**
Cleaning														
Mechanical	1990	-	-	-	-	3 500	56	-	-	-	2 001	-	-	**5 557**
Chemical	1990	-	-	-	-	9 280	89 925	-	-	-	-	-	-	**99 205**
Manual	1990	-	-	-	2 421	-	5 725	-	-	3 065	-	-	-	**11 211**
Total	1990	-	-	-	2 421	12 780	95 707	-	-	3 065	2 001	-	-	**115 974**
Thinning														
Pre-commercial	1990	6 256	16	1 778	7 160	14 980	..	11	335	-	21 694	-	-	..
Commercial	1990	-	12	40	-	-	..	-	-	-	69	-	-	..
Total	1990	6 256	28	1 818	7 160	14 980	15 312	11	335	-	21 763	-	-	**67 663**
Fertilizing	1990	-	-	-	-	-	154	-	-	-	3 426	-	-	**3 580**
Pruning	1990	-	-	-	-	-	389	-	-	-	4 185	-	-	**4 574**
Other	1990	-	-	46	-	-	-	-	175	-	19 933	-	-	**20 154**
Total	1990	8 716	239	6 475	23 595	27 760	111 562	267	1 671	3 065	108 968	-	-	**292 318**
B. Private land														
Weeding														
Chemical	1990	33	331	7 062	..	-	-	..	60	..	..	..	..	..
Manual	1990	20	249	141	..	-	-	..	5	..	..	..	..	..
Total	1990	53	580	7 223	..	-	-	..	65	..	..	..	..	..
Cleaning														
Mechanical	1990	-	-	-	..	2 313	468	..	-	..	..	..	..	..
Chemical	1990	-	-	-	..	17 095	3 415	..	-	..	..	..	..	..
Manual	1990	-	-	-	..	-	421	..	-	..	..	..	..	..
Total	1990	-	-	-	..	19 408	4 304	..	-	..	..	..	..	..

4.7 Area of Stand Tending by Ownership, Treatment, and Province/Territory, 1990 (continued)

(Hectares)

Treatment	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
Thinning														
Pre-commercial	1990	682	163	1 450	..	3 369	..	..	-	..	..	..	..	..
Commercial	1990	-	169	547	..	-	..	..	5	..	..	..	..	..
Total	1990	682	332	1 997	..	3 369	5 223	..	5	..	..	..	..	..
Fertilizing	1990	-	-	-	..	4 575	476	..	-	..	..	..	..	..
Pruning	1990	-	-	-	..	-	657	..	-	..	..	..	..	..
Other	1990	-	-	136	..	301	-	..	-	..	..	..	..	..
Total	1990	735	912	9 356	..	27 653	10 660	..	70	..	..	..	..	..
C. Provincial and private lands														
Weeding														
Mechanical	1990	-	-	-	..	-	-	..	143	-	-	-	-	..
Chemical	1990	2 493	382	11 668	..	-	-	256	60	-	34 270	-	-	..
Manual	1990	20	409	166	..	-	-	..	1 023	-	23 390	-	-	..
Total	1990	2 513	791	11 834	..	-	-	256	1 226	-	57 660	-	-	..
Cleaning														
Mechanical	1990	-	-	-	..	5 613	524	..	-	-	2 001	-	-	..
Chemical	1990	-	-	-	..	26 375	93 341	..	-	-	..	-	-	..
Manual	1990	-	-	-	..	-	6 146	..	-	3 065	..	-	-	..
Total	1990	-	-	-	..	32 188	100 011	..	-	3 065	2 001	-	-	..
Thinning														
Pre-commercial	1990	6 938	179	3 228	..	18 349	..	11	335	-	21 694	-	-	..
Commercial	1990	-	181	587	..	-	..	..	5	-	69	-	-	..
Total	1990	6 938	360	3 815	..	18 349	20 535	11	340	-	21 763	-	-	..
Fertilizing	1990	-	-	-	..	4 575	630	..	-	-	3 426	-	-	..
Pruning	1990	-	-	-	..	-	1 046	..	-	-	4 185	-	-	..
Other	1990	-	-	182	..	301	-	-	175	-	19 933	-	-	..
Total	1990	9 451	1 151	15 831	..	55 413	122 222	267	1 741	3 065	108 968	-	-	..

4.7 Area of Stand Tending by Ownership, Treatment, and Province/Territory, 1990 (continued)

(Hectares)

Treatment	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
D. Federal land														
Weeding														
Total	1990	-	-	1	8	-	490	-	-	-	-	...	...	**499**
Cleaning														
Manual	1990	-	-	..	-	8	-	-	-	-	-	...	...	**8**
Total	1990	-	-	20	-	8	-	-	-	-	-	...	...	**28**
Thinning														
Pre-commercial	1990	-	-	-	82	42	..	-	-	-	389	...	...	..
Commercial	1990	-	-	33	-	-	..	-	-	-	-	...	...	..
Total	1990	-	-	33	82	42	121	-	-	-	389	...	...	**667**
Fertilizing	1990	-	-	-	-	8	-	-	-	-	-	...	...	**8**
Pruning	1990	-	-	-	-	-	36	-	-	-	-	...	...	**36**
Other	1990	-	-	20	88	32	683	-	-	-	47	...	...	**870**
Total	1990	-	-	74	178	90	1 330	-	-	-	436	...	...	**2 108**
E. Total														
Weeding														
Mechanical	1990	-	-	..	..	-	-	..	143	-	-	-	-	..
Chemical	1990	2 493	382	..	..	-	-	256	60	-	34 270	-	-	..
Manual	1990	20	409	..	..	-	-	..	1 023	-	23 390	-	-	..
Total	1990	2 513	791	11 835	..	-	490	256	1 226	-	57 660	-	-	..
Cleaning														
Mechanical	1990	-	-	..	..	5 813	524	..	-	-	2 001	-	-	..
Chemical	1990	-	-	..	..	26 375	93 341	..	-	-	..	-	-	..
Manual	1990	-	-	..	..	8	6 146	..	-	3 065	..	-	-	..
Total	1990	-	-	20	..	32 196	100 011	..	-	3 065	2 001	-	-	..
Thinning														
Pre-commercial	1990	6 938	179	3 228	..	18 391	..	11	335	-	22 083	-	-	..
Commercial	1990	-	181	620	..	-	..	..	5	-	69	-	-	..
Total	1990	6 938	360	3 848	..	18 391	20 656	11	340	-	22 152	-	-	..

4.7 Area of Stand Tending by Ownership, Treatment, and Province/Territory, 1990 (concluded)

(Hectares)

Treatment	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
Fertilizing	1990	-	-	-	..	4 583	630	..	-	-	3 426	-	-	..
Pruning	1990	-	-	-	..	-	1 082	..	-	-	4 185	-	-	..
Other	1990	-	-	202	..	333	683	-	175	-	19 980	-	-	..
Total	1990	9 451	1 151	15 905	..	55 503	123 552	267	1 741	3 065	109 404	-	-	..

Note - N.S. 1990 "Other" on federal land comprises remnant removal.
"Thinning" on provincial and private lands includes possible hardwood thinning.
"Other" on provincial and private lands comprises stand conversion.

N.B. 1990 "Other" on federal land comprises remnant removal.

Que. 1990 Data for commercial thinning on provincial, private, and federal lands are included with partial cut, table 4.1.
"Other" on federal land comprises brushing.
"Mechanical cleaning" on provincial and private lands comprises manual cleaning.
"Other" on private land comprises protection.
The figures for private land only includes work subsidized by government programs (forest resource development program of the Ministère des Forêts du Québec and the Eastern Quebec forestry program funded by Forestry Canada).

Ont. 1990 "Other" on federal land comprises chemical brushing, improvement cut, and stand conversion.

Sask. 1990 "Other" on provincial Crown land comprises a vegetation control trial by controlled sheep grazing.

B.C. 1990 "Pruning" comprises mistletoe control.
"Other" on provincial Crown land comprises site rehabilitation.

Source: National Forestry Database.

4.8 Area of Stand Tending by Ownership, Species, and Province/Territory, 1990

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Eastern white pine	1990	-	-	-	..	-	4 062	-	-	..	-	-	-	..
Red pine	1990	-	-	-	..	-	2 098	-	-	..	-	-	-	..
Jack pine	1990	-	-	-	..	-	31 488	-	754	..	-	-	-	..
Black spruce	1990	-	-	-	..	-	-	267	-	..	-	-	-	..
White spruce	1990	-	-	-	..	-	-	-	917	..	-	-	-	..
Miscellaneous spruces	1990	-	-	-	..	-	60 846	-	-	..	-	-	-	..
Balsam fir	1990	6 256	-	-	..	-	-	-	-	..	-	-	-	..
Fir and black spruce	1990	2 460	16	-	..	-	-	-	-	..	-	-	-	..
Spruce and fir	1990	-	-	1 864	..	-	-	-	-	..	-	-	-	..
Spruce and pine	1990	-	-	4 611	..	-	-	-	-	..	-	-	-	..
Miscellaneous softwoods	1990	-	211	-	..	27 760*	3 025	-	-	..	49 307	-	-	..
Maple and birch	1990	-	12	-	..	-	-	-	-	..	-	-	-	..
Miscellaneous hardwoods	1990	-	-	-	..	-	10 043	-	-	..	59 661	-	-	..
Total softwoods and hardwoods	1990	8 716	239	6 475	23 595	27 760	111 562	267	1 671	3 065	108 968	-	-	**292 318**
B. Private land														
Eastern white pine	1990	-	-	-	..	-	2 435	..	-	..	..	..	..	..
Red pine	1990	-	-	-	..	-	1 420	..	-	..	..	..	..	..
Jack pine	1990	-	-	-	..	-	36	..	70	..	..	..	..	..
Miscellaneous spruces	1990	-	-	-	..	-	598	..	-	..	..	..	..	..
Balsam fir	1990	682	-	-	..	-	-	..	-	..	..	..	..	..
Fir and black spruce	1990	53	163	-	..	-	-	..	-	..	..	..	..	..
Spruce and fir	1990	-	-	2 133	..	-	-	..	-	..	..	..	..	..
Spruce and pine	1990	-	-	7 223	..	-	-	..	-	..	..	..	..	..
Miscellaneous softwoods	1990	-	580	-	..	22 585*	1 565	..	-	..	..	..	..	..
Maple and birch	1990	-	169	-	..	-	-	..	-	..	..	..	..	..
Miscellaneous hardwoods	1990	-	-	-	..	5 068	4 606	..	-	..	..	..	..	..
Total softwoods and hardwoods	1990	735	912	9 356	..	27 653	10 660	..	70	..	..	..	..	..
C. Provincial and private lands														
Eastern white pine	1990	-	-	-	..	-	6 497	-	-	..	..	-	-	..
Red pine	1990	-	-	-	..	-	3 518	-	-	..	..	-	-	..
Jack pine	1990	-	-	-	..	-	31 524	-	824	..	..	-	-	..
Black spruce	1990	-	-	-	..	-	-	267	-	..	..	-	-	..
White spruce	1990	-	-	-	..	-	-	-	917	..	..	-	-	..
Miscellaneous spruces	1990	-	-	-	..	-	61 445	-	-	..	..	-	-	..
Balsam fir	1990	6 938	-	-	..	-	-	-	-	..	..	-	-	..
Fir and black spruce	1990	2 513	179	-	..	-	-	-	-	..	..	-	-	..
Spruce and fir	1990	-	-	3 997	..	-	-	-	-	..	..	-	-	..
Spruce and pine	1990	-	-	11 834	..	-	-	-	-	..	..	-	-	..

4.8 Area of Stand Tending by Ownership, Species, and Province/Territory, 1990 (concluded)

(Hectares)

Species	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
Miscellaneous softwoods	1990	-	791	-	..	50 345*	4 590	-	-	..	49 307	-	-	..
Maple and birch	1990	-	181	-	..	-	-	-	-	..	-	-	-	..
Miscellaneous hardwoods	1990	-	-	-	..	5 068	14 649	-	-	..	59 661	-	-	..
Total softwoods and hardwoods	1990	9 451	1 151	15 831	..	55 413	122 222	267	1 741	3 065	108 968	-	-	..
D. Federal land														
Total softwoods and hardwoods	1990	-	-	74	178	90	1 330	-	-	-	436	...	...	**2 108**
E. Total														
Eastern white pine	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Red pine	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Jack pine	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Black spruce	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
White spruce	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Miscellaneous spruces	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Balsam fir	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Fir and black spruce	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Spruce and fir	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Spruce and pine	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Miscellaneous softwoods	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Maple and birch	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Miscellaneous hardwoods	1990	..	..	..	..	..	..	..	..	..	..	..	..	..
Total softwoods and hardwoods	1990	9 451	1 151	15 905	..	55 503	123 552	267	1 741	3 065	109 404	..	..	..

Note - B.C. 1990 "Miscellaneous softwoods" on provincial Crown land comprises coastal Douglas-fir, interior Douglas-fir, interior spruce, western red cedar, western hemlock, interior lodgepole pine, and western larch.
"Miscellaneous hardwoods" on provincial Crown land comprises alder, aspen, birch, cottonwood, thimbleberry, and salmonberry.

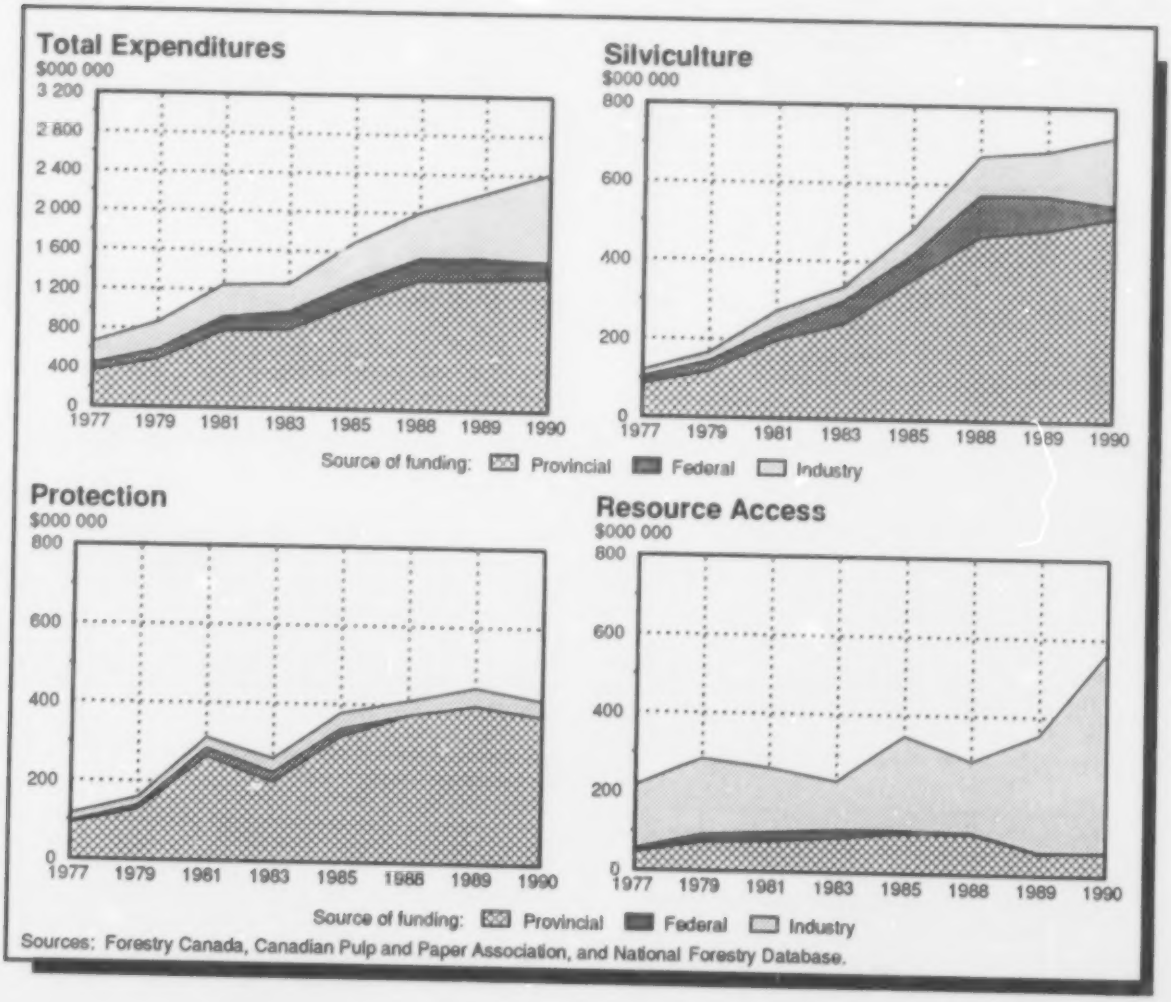
Source: National Forestry Database.

SECTION 5. FOREST MANAGEMENT EXPENDITURES

The Forest Management Expenditures Survey is a co-operative effort between the National Forestry Database Program and the Canadian Pulp and Paper Association. It provides information on the level of funding for forest management activity by government and the forest industry in Canada. The major activities are:

SILVICULTURE	• **Site preparation, regeneration, tending, marking and silvicultural support**
PROTECTION	• **Fire, pests**
RESOURCE ACCESS	• **Capital and maintenance**
OTHER MANAGEMENT COSTS	• **Inventory, research, timber management, and administration**

Figure 21



Sources: Forestry Canada, Canadian Pulp and Paper Association, and National Forestry Database.

TERMINOLOGY

ACTIVITY (FOREST MANAGEMENT)

Forest management activities for which information on the level of funding by government and the forest industry is provided. (10)

SILVICULTURE	**Site preparation**	Disturbance of an area's topsoil and ground vegetation to create conditions suitable for regeneration. (5) It includes mechanical and chemical treatments, prescribed burning, and scarification. (10)
	Regeneration	The renewal of a forest crop by natural or artificial means. It includes: planting bare-root and container seedlings; seeding with site preparation; strip cutting; shelterwood cutting; clearcutting. (5, 10)
	Tending	Generally, any operation carried out for the benefit of a forest crop or an individual thereof, at any stage of its life; covers operations both on the crop itself, e.g., thinnings and improvement cuttings, and on competing vegetation, e.g., weeding, cleaning and girdling of unwanted growth, but not regeneration cuttings or site preparation. (6)
	Marking	Selection and indication, usually by marking with paint on the stem, of trees to be felled or retained. (6)
	Silvicultural support	Seed collection; tree improvement; provincial stock production (container and bare-root); seed plant operations; and purchased growing stock. (10)
PROTECTION	**Fire**	Prevention, suppression, shared cost for assessment, and area protection. (10)
	Pests	Any organism, whether insect, pathogen, mammal, or competing vegetation capable of causing damage to a forest crop. (6)
RESOURCE ACCESS	**Capital**	All road systems (primary, secondary, and tertiary, including bridges), paid for by the managing agency. (10)
	Maintenance	All monies expended to maintain the existing forest access road system. (10)
OTHER MANAGEMENT COSTS	**Forest inventory**	Photography, interpretation, inventory cruising, compilation, drafting, and all other expenditures on goods and services to produce information on timber resources. (10)
	Forest research	Total research expenditures in support of forest management. (10)
	Timber management	Operational timber surveys, cut and postcut inspections, management planning, etc. (10)
	Administration	Total administration expenditures in support of the above forest management activities. (10)

TERMINOLOGY (concluded)

SOURCE OF FUNDING

	Direct	A-base (departmental provincial and federal fundings), excluding agreement funding.
	Agreement	Federal-provincial forest resource development agreements (provincial and federal funding).
	Industry	The net dollars expended by industry are equal to the gross expenditure by industry, or an account of all dollars spent by companies minus the money recovered from governments either as payment for work done or as offsets against stumpage. (10)

OWNERSHIP/TENURE

The holding, particularly as to manner or term, of a property where the responsibility for forest management rests with the forest owner. (2)
Legislation defines a number of forestry tenures by which the cutting of timber and other user rights to Crown land are assigned.

PROVINCIAL CROWN LAND	**Long-term licence**	Public lands held under a long-term licence such as Forest Management Agreement (FMA), Tree Farm Licence (TFL), Timber Supply and Forest Management Agreement (TSFMA), or equivalent. (3)
	Other tenure	Public lands, other than those under long-term licence, held under a variety of tenure arrangements or volume allotments; for example, unregulated tenure (timber licence, timber berth) in British Columbia. (3)
PRIVATE LAND	**Industrial land**	Land owned by a large corporate industry for commercial forestry purposes. (2)
	Nonindustrial land	Land owned by corporations or individuals that may or may not be used for commercial forestry purposes. (2) These corporations may include churches, municipalities, villages, townships, companies, limited partnerships, organizations, and associations.
FEDERAL LAND	**Indian land**	Lands within Indian reserves or Indian settlements. (2)
	National parks	
	Other federal land	Other Crown land within the jurisdiction of the federal government. Includes lands held by National Defense, National Capital Commission, Forestry Canada, Energy, Mines and Resources, Transportation, and Crown Corporations. (2)

5.1 Total Expenditures on Forest Management by Source of Funding, Activity, and Province/Territory, 1990

(Thousands of dollars)

Source of funding/ activity	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Silviculture														
Public funding														
Site preparation	1990	207	846	1 934	302	35 581	30 622	-	958	55	17 109	-	..	**87 614**
Regeneration	1990	1 192	755	4 646	3 380	70 471	36 384	-	885	..	66 015*	-	..	**183 728***
Tending	1990	4 739	947	3 984	8 654	24 545	13 295	-	73	..	41 487	-	..	**97 724**
Marking	1990	77	-	469	-	-	1 573	-	-	..	11 778	-	..	**13 897**
Silvicultural support	1990	1 444	512	5 512	4 922	48 663	40 494	3 894	2 336	..	34 639	47	..	**142 463**
Industry	1990	2 342[p]	-	5 707[p]	11 713[p]	9 590[p]	1 639[p]	3 697[p]	2 935[p]	8 814[p]	126 686[p]	-	..	**173 123[p]**
Total	1990	10 001[p]	3 060	22 252[p]	28 971[p]	188 850[p]	124 006[p]	7 591[p]	7 187[p]	31 693[p]	298 362*	47	140	**722 160***
B. Protection														
Public funding														
Fire	1990	105	66	5 184	8 872	23 239	71 107	20 400	32 594	70 274	86 439	12 848	-	**331 128**
Pests	1990	1 364	-	99	9 742	20 115	5 544	2 592	266	67	3 749	-	10	**43 548**
Industry	1990	1 976[p]	-	153[p]	987[p]	22 202[p]	1 150[p]	169[p]	-	1 635[p]	11 953[p]	-	-	**40 225[p]**
Total	1990	3 445[p]	66	5 436[p]	19 601[p]	65 556[p]	77 801[p]	23 161[p]	32 860	71 976[p]	102 141[p]	12 848	10	**414 901[p]**
C. Resource access														
Public funding														
Capital	1990	1 604	670	4 332	429	152	17 466	-	-	-	27 865*	-	28	**52 546***
Maintenance	1990	-	-	277	-	132	3 003	-	37	-	4 024	-	-	**7 473**
Industry	1990	5 795[p]	-	5 756[p]	23 997[p]	73 615[p]	48 929[p]	4 810[p]	4 400[p]	15 255[p]	322 658[p]	-	-	**505 215[p]**
Total	1990	7 399[p]	670	10 365[p]	24 426[p]	73 899[p]	69 398[p]	4 810[p]	4 437[p]	15 255[p]	354 547*	-	28	**565 234***
D. Other management costs														
Public funding														
Inventory	1990	2 647	352	1 522	1 425	15 015	2 429	1 171	1 426	3 762	9 378	259	60	**39 446**
Research*	1990	5 440	304	1 276	11 517	22 453	35 357	159	40	13 472	27 052	-	-	**117 070**
Timber management	1990	1 299	840	635	4 160	43 591	23 048	283	1 043	8 325	34 027*	288	-	**117 539***
Administration	1990	147	1 587	8 186	3 801	65 528	50 449	1 576	1 482	9 822	88 038	257	237	**231 110**
Other	1990	-	-	-	6 000	16 246	2	-	8	-	-	-	-	**22 256**
Industry	1990	964[p]	-	4 377[p]	7 555[p]	34 795[p]	6 467[p]	1 129[p]	1 243[p]	11 823[p]	109 601[p]	-	-	**177 954[p]**
Total	1990	10 497[p]	3 083	15 996[p]	34 458[p]	197 628[p]	117 751[p]	4 318[p]	5 242[p]	47 204[p]	268 096*	804	297	**705 374***
E. Total - all costs	1990	31 342[p]	6 879	54 050[p]	107 456[p]	525 933[p]	388 956[p]	39 880[p]	49 726[p]	166 129[p]	1 023 145*	13 699	475	**2 407 670***

*Research includes total expenditures of Forestry Canada Regions and Institutes, excluding agreements, and grants and contributions.
In Quebec, research also includes the Eastern Quebec Development Plan.

5.1 Total Expenditures on Forest Management by Source of Funding, Activity, and Province/Territory, 1990 (concluded)

(Thousands of dollars)

Source of funding/ activity	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada

Note - N.S. 1990 "Silvicultural support" includes gross expenditures for nursery operations. Revenues received for sale of seedlings were $1 822 500.
Fire protection expenditures are prorated to tenure based on the average fire occurrence in 1988-1990, and pest protection expenditures are prorated based on size of tenure class in the province.
Maintenance costs for resource access are included under administration.

N.B. 1990 "Other" includes overhead such as building expenses, vehicles, and staff for operation and for some district managers.

Que. 1990 "Administration" includes Forestry Canada - National Capital Region's total expenditures, excluding grants and contributions.
"Other" includes statutory contributions to employee benefit plans dispensed from the National Capital Region for the whole of Forestry Canada.

N.W.T. 1990 Expenditures for fire protection are not specifically directed to the protection of timber values and are therefore not reported as forest management expenditures.

Source: National Forestry Database.

5.2 Total Expenditures on Forest Management by Source of Funding and Province/Territory, 1990

(Thousands of dollars)

Source of funding	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Public - direct														
Provincial funding	1990	5 778	1 923	19 460	33 941	320 815	300 481	30 003	41 019	118 567	429 082	13 611	475	**1 315 155**
Federal funding	1990	5 367	-	..	11 187	52 378	28 970	..	..	9 960	12 586[e]	...	...	**120 448[e]**
Total funding	1990	11 145	1 923	19 460	45 128	373 194	329 451	30 003	41 019	128 527	441 668[e]	13 611	475	**1 435 604[e]**
B. Public - agreement														
Provincial funding	1990	2 230	1 225	7 552	9 997	4 896	-	-	40	-	4 899	9	-	**30 848**
Federal funding	1990	6 890	3 731	11 045	8 081	7 641	1 320	72	89	75	5 680	79	-	**44 703**
Total funding	1990	9 120	4 956	18 597	18 076	12 537	1 320	72	129	75	10 579	88	-	**75 549**
C. Public - direct and agreement														
Provincial funding	1990	8 008	3 148	27 012	43 938	325 711	300 481	30 003	41 059	118 567	433 981	13 620	475	**1 346 003**
Federal funding	1990	12 257	3 731	11 045	19 268	60 019	30 290	72	89	10 035	18 266[e]	79	-	**165 151[e]**
Total funding	1990	20 265	6 879	38 057	63 204	385 731	330 771	30 075	41 148	128 602	452 247[e]	13 699	475	**1 511 153[e]**
D. Industry - net expenditures	1990	11 077[p]	-	15 993[p]	44 252[p]	140 202[p]	58 185[p]	9 805[p]	8 578[p]	37 527[p]	570 898[p]	-	-	**896 517[p]**
E. Total - public and industry	1990	31 342[p]	6 879	54 050[p]	107 456[p]	525 933[p]	388 956[p]	39 880[p]	49 726[p]	166 129[p]	1 023 145[e]	13 699	475	**2 407 670[p]**

Note - Alta. 1990 There were no federal/provincial forestry agreements in place in Alberta in 1990-1991. However, there was interim funding of $75 000 for an indian land forestry program.

Yukon 1990 Figures for "public - direct" include salary dollars and operation and maintenance expenditures; they do not include overhead apportionments for the cost of buildings, vehicles, capital expenditures, senior management (non-forestry), etc.

Source: National Forestry Database.

5.3 Total Expenditures on Forest Management by Source of Funding, Activity, and Province/Territory, 1990

(Thousands of dollars)

Source of funding/ activity	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Direct - provincial funding														
Silviculture	1990	1 579	1 069	3 388	2 828	166 359	121 106	3 894	4 192	22 824	166 291	39	140	**493 709**
Protection	1990	992	66	5 250	18 614	42 935	76 644	22 992	32 860	70 341	90 188	12 848	10	**373 740**
Resource access	1990	1 538	-	2 136	-	..	20 118	-	37	-	31 887	-	28	**55 744**
Other expenditures	1990	1 669	788	8 686	12 499	111 521	82 613	3 117	3 930	25 401	140 716	724	297	**391 961**
Total	1990	5 778	1 923	19 460	33 941	320 815	300 481	30 003	41 019	118 567	429 082	13 611	475	**1 315 155**
B. Direct - federal funding														
Silviculture	1990	-	-	-	56	4 086	72	-	-	55	2*	...	...	**4 271***
Protection	1990	-	-	-	-	419	-	-	-	-	-	-	-	**419**
Resource access	1990	-	-	-	57	181	351	-	-	-	2*	...	...	**591***
Other expenditures	1990	5 367	..	..	11 074	47 693	28 547	..	..	9 905	12 582*	...	...	**115 166***
Total	1990	5 367	-	..	11 187	52 378	28 970	..	..	9 960	12 586*	...	...	**120 448***
C. Direct - public funding														
Silviculture	1990	1 579	1 069	3 388	2 884	170 445	121 178	3 894	4 192	22 879	166 293*	39	140	**497 980***
Protection	1990	992	66	5 250	18 614	43 354	76 644	22 992	32 860	70 341	90 188	12 848	10	**117 380**
Resource access	1990	1 538	-	2 136	57	181	20 469	-	37	-	31 889*	-	28	**56 335***
Other expenditures	1990	7 036	788	8 686	23 573	159 214	111 160	3 117	3 930	35 306	153 298*	724	297	**507 129***
Total	1990	11 145	1 923	19 460	45 128	373 194	329 451	30 003	41 019	128 527	441 668*	13 611	475	**1 435 604***
D. Agreement - provincial funding														
Silviculture	1990	1 747	608	5 490	8 739	3 707	-	-	-	-	2 177	1	-	**22 469**
Protection	1990	86	-	7	-	..	-	-	-	-	-	-	-	**93**
Resource access	1990	19	183	947	183	52	-	-	-	-	-	-	-	**1 384**
Other expenditures	1990	378	434	1 108	1 075	1 138	-	-	40	-	2 722	8	-	**6 903**
Total	1990	2 230	1 225	7 552	9 997	4 896	-	-	40	-	4 899	9	-	**30 848**
E. Agreement - federal funding														
Silviculture	1990	4 333	1 383	7 667	5 636	5 108	1 189	-	60	-	3 206	7	-	**28 589**
Protection	1990	391	-	26	..	..	7	-	-	-	-	-	-	**424**
Resource access	1990	47	487	1 526	190	52	-	-	-	-	-	-	-	**2 302**
Other expenditures	1990	2 119	1 861	1 825	2 255	2 481	124	72	29	75	2 475	72	-	**13 388**
Total	1990	6 890	3 731	11 045	8 081	7 641	1 320	72	89	75	5 680	79	-	**44 703**

5.3 Total Expenditures on Forest Management by Source of Funding, Activity, and Province/Territory, 1990 (continued)

(Thousands of dollars)

Source of funding/ activity	Year	Nfld	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
F. Agreement - public funding														
Silviculture	1990	6 080	1 991	13 157	14 374	8 815	1 189	-	60	-	5 383	8	-	**51 057**
Protection	1990	477	-	33	-	..	7	-	-	-	-	-	-	**517**
Resource access	1990	66	670	2 473	372	103	-	-	-	-	-	-	-	**3 684**
Other expenditures	1990	2 497	2 295	2 933	3 330	3 619	124	72	69	75	5 197	80	-	**20 291**
Total	1990	9 120	4 956	18 597	18 076	12 537	1 320	72	129	75	10 579	88	-	**75 549**
G. Direct and agreement - provincial funding														
Silviculture	1990	3 326	1 677	8 878	11 567	170 066	121 106	3 894	4 192	22 824	168 468	40	140	**516 178**
Protection	1990	1 078	66	5 257	18 614	42 935	76 644	22 992	32 860	70 341	90 188	12 848	10	**373 833**
Resource access	1990	1 557	183	3 083	183	52	20 118	-	37	-	31 887	-	28	**57 128**
Other expenditures	1990	2 047	1 222	9 794	13 574	112 659	82 613	3 117	3 970	25 401	143 438	732	297	**396 864**
Total	1990	8 008	3 148	27 012	43 938	325 711	300 481	30 003	41 059	118 567	433 981	13 620	475	**1 346 003**
H. Direct and agreement - federal funding														
Silviculture	1990	4 333	1 383	7 667	5 692	9 194	1 261	-	60	55	3 206[e]	7	-	**32 860[e]**
Protection	1990	391	-	26	-	419	7	-	-	-	-	-	-	**843**
Resource access	1990	47	487	1 526	247	233	351	-	-	-	2[e]	-	-	**2 893[e]**
Other expenditures	1990	7 486	1 861	1 825	13 329	50 174	28 671	72	29	9 980	15 057[e]	72	-	**128 556[e]**
Total	1990	12 257	3 731	11 045	19 268	60 019	30 290	72	89	10 035	18 266[e]	79	-	**165 151[e]**
I. Direct and agreement - public funding														
Silviculture	1990	7 659	3 060	16 545	17 258	179 260	122 367	3 894	4 252	22 879	171 676[e]	47	140	**549 037[e]**
Protection	1990	1 469	66	5 283	18 614	43 354	76 651	22 992	32 860	70 341	90 188	12 848	10	**374 676**
Resource access	1990	1 604	670	4 609	429	284	20 469	-	37	-	31 889[e]	-	28	**60 019[e]**
Other expenditures	1990	9 533	3 083	11 619	26 903	162 833	111 284	3 189	3 999	35 381	158 495[e]	804	297	**527 420[e]**
Total	1990	20 265	6 879	38 057	63 204	385 731	330 771	30 075	41 148	128 602	452 247[e]	13 699	475	**1 511 153[e]**
J. Industry - net expenditures														
Silviculture	1990	2 342[p]	-	5 707[p]	11 713[p]	9 590[p]	1 639[p]	3 697[p]	2 935[p]	8 814[p]	126 686[p]	-	-	**173 123[p]**
Protection	1990	1 976[p]	-	153[p]	987[p]	22 202[p]	1 150[p]	169[p]	-	1 635[p]	11 953[p]	-	-	**40 225[p]**
Resource access	1990	5 795[p]	-	5 756[p]	23 997[p]	73 615[p]	48 929[p]	4 810[p]	4 400[p]	15 255[p]	322 658[p]	-	-	**505 215[p]**
Other expenditures	1990	964[p]	-	4 377[p]	7 555[p]	34 795[p]	6 467[p]	1 129[p]	1 243[p]	11 823[p]	109 601[p]	-	-	**177 954[p]**
Total	1990	11 077[p]	-	15 993[p]	44 252[p]	140 202[p]	58 185[p]	9 805[p]	8 578[p]	37 527[p]	570 898[p]	-	-	**896 517[p]**

5.3 Total Expenditures on Forest Management by Source of Funding, Activity, and Province/Territory, 1990 (concluded)

(Thousands of dollars)

Source of funding/ activity	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
K. Total - public funding and industry														
Silviculture	1990	10 001[p]	3 060	22 252[p]	28 971[p]	188 850[p]	124 006[p]	7 591[p]	7 187[p]	31 693[p]	298 362[e]	47	140	**722 160[e]**
Protection	1990	3 445[p]	66	5 436[p]	19 601[p]	65 556[p]	77 801[p]	23 161[p]	32 860	71 976[p]	102 141[p]	12 848	10	**414 901[p]**
Resource access	1990	7 399[p]	670	10 365[p]	24 426[p]	73 899[p]	69 398[p]	4 810[p]	4 437[p]	15 255[p]	354 547[e]	-	28	**565 234[e]**
Other expenditures	1990	10 497[p]	3 083	15 996[p]	34 458[p]	197 628[p]	117 751[p]	4 318[p]	5 242[p]	47 204[p]	268 096[e]	804	297	**705 374[e]**
Total	1990	31 342[p]	6 879	54 050[p]	107 456[p]	525 933[p]	388 956[p]	39 880[p]	49 726[p]	166 129[p]	1 023 145[e]	13 699	475	**2 407 670[e]**

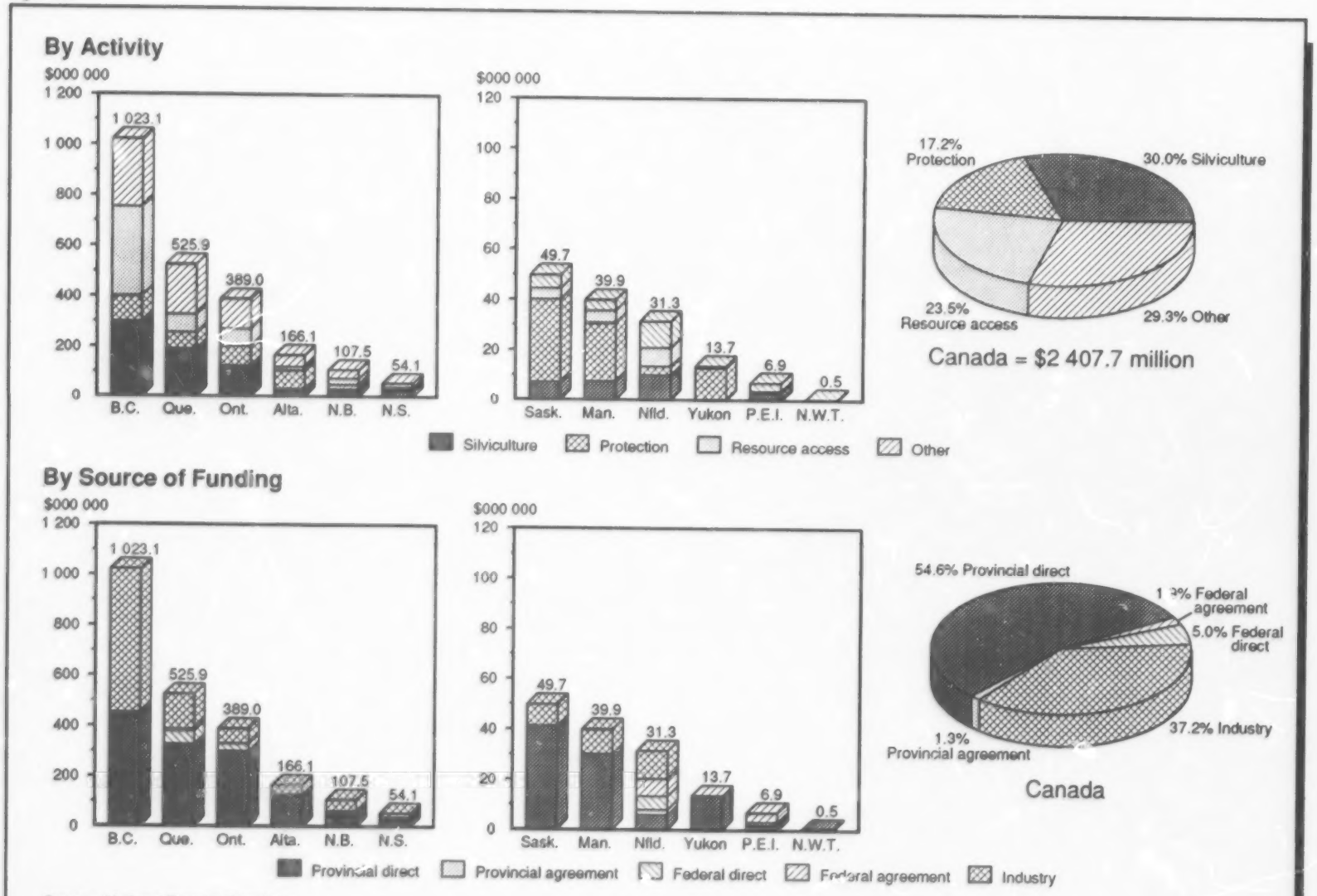
Note - Alta. 1990 There were no federal/provincial forestry agreements in place in Alberta in 1990-1991. However, there was interim funding of $75 000 for an indian land forestry program.

Yukon 1990 Figures for "direct - public funding" include salary dollars and operation and maintenance expenditures; they do not include overhead apportionments for the cost of buildings, vehicles, capital expenditures, senior management (non-forestry), etc.

Source: National Forestry Database.

FOREST MANAGEMENT EXPENDITURES - 1990

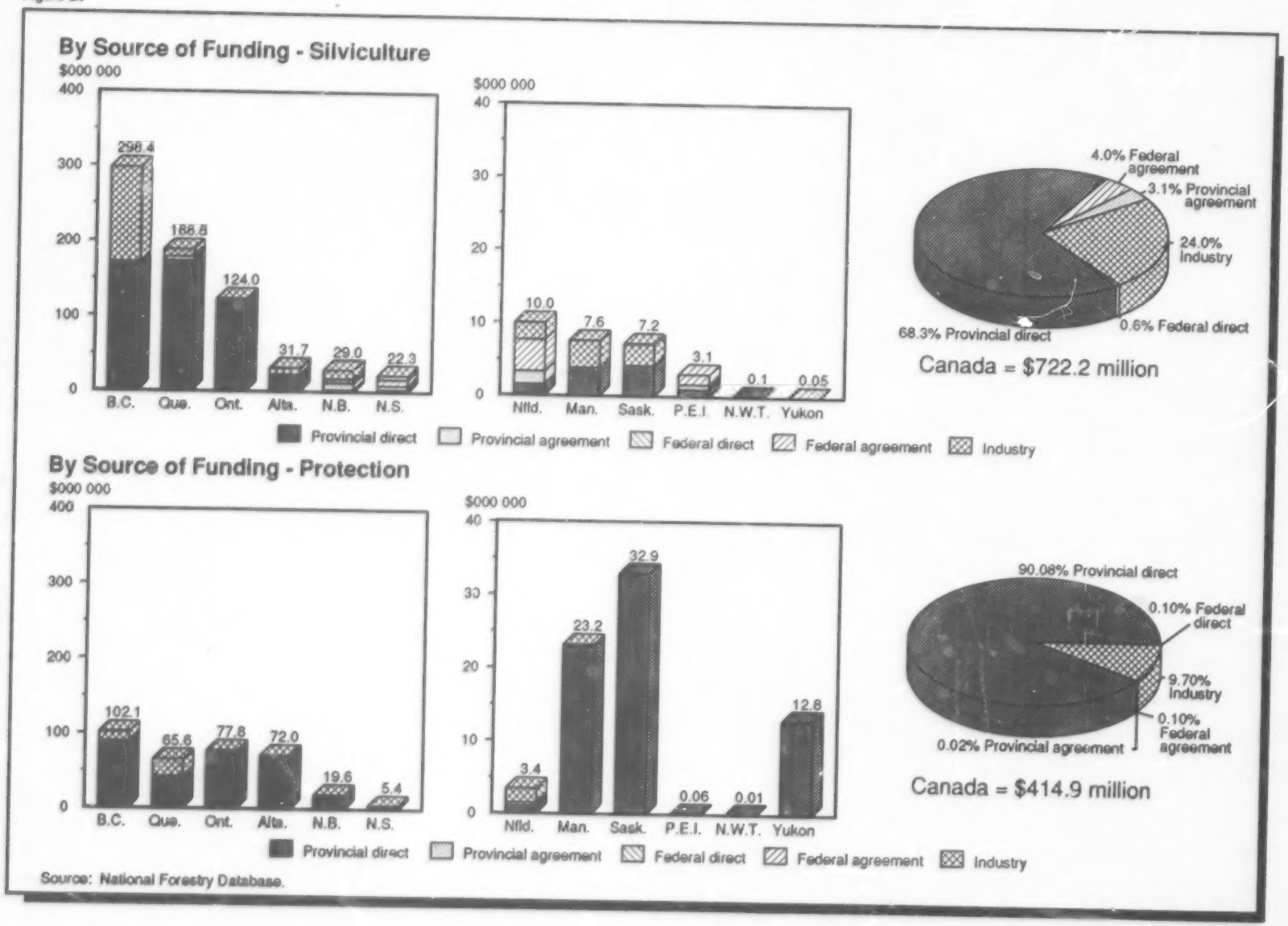
Figure 22



Source: National Forestry Database.

FOREST MANAGEMENT EXPENDITURES - 1990

Figure 23



Source: National Forestry Database.

5.4 Silvicultural Expenditures on Forest Management by Source of Funding and Province/Territory, 1990

(Thousands of dollars)

Source of funding	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Public - direct														
Provincial funding	1990	1 579	1 069	3 388	2 828	166 359	121 106	3 894	4 192	22 824	166 291	39	140	**493 709**
Federal funding	1990	-	-	-	56	4 086	72	-	-	55	2[e]	...	...	**4 271[e]**
Total funding	1990	1 579	1 069	3 388	2 884	170 445	121 178	3 894	4 192	22 879	166 293[e]	39	140	**497 980[e]**
B. Public - agreement														
Provincial funding	1990	1 747	608	5 490	8 739	3 707	-	-	-	-	2 177	1	-	**22 469**
Federal funding	1990	4 333	1 383	7 667	5 636	5 108	1 189	-	60	-	3 206	7	-	**28 589**
Total funding	1990	6 080	1 991	13 157	14 374	8 815	1 189	-	60	-	5 383	8	-	**51 057**
C. Public - direct and agreement														
Provincial funding	1990	3 326	1 677	8 878	11 567	170 066	121 106	3 894	4 192	22 824	168 468	40	140	**516 178**
Federal funding	1990	4 333	1 383	7 667	5 692	9 194	1 261	-	60	55	3 208[e]	7	-	**32 860[e]**
Total funding	1990	7 659	3 060	16 545	17 258	179 260	122 367	3 894	4 252	22 879	171 676[e]	47	140	**549 037[e]**
D. Industry - net expenditures	1990	2 342[p]	-	5 707[p]	11 713[p]	9 590[p]	1 639[p]	3 697[p]	2 935[p]	8 814[p]	126 686[p]	-	-	**173 123[p]**
E. Total - public and industry	1990	10 001[p]	3 060	22 252[p]	28 971[p]	188 850[p]	124 006[p]	7 591[p]	7 187[p]	31 693[p]	298 362[e]	47	140	**722 160[e]**

Source: National Forestry Database.

5.5 Protection Expenditures on Forest Management by Source of Funding and Province/Territory, 1990

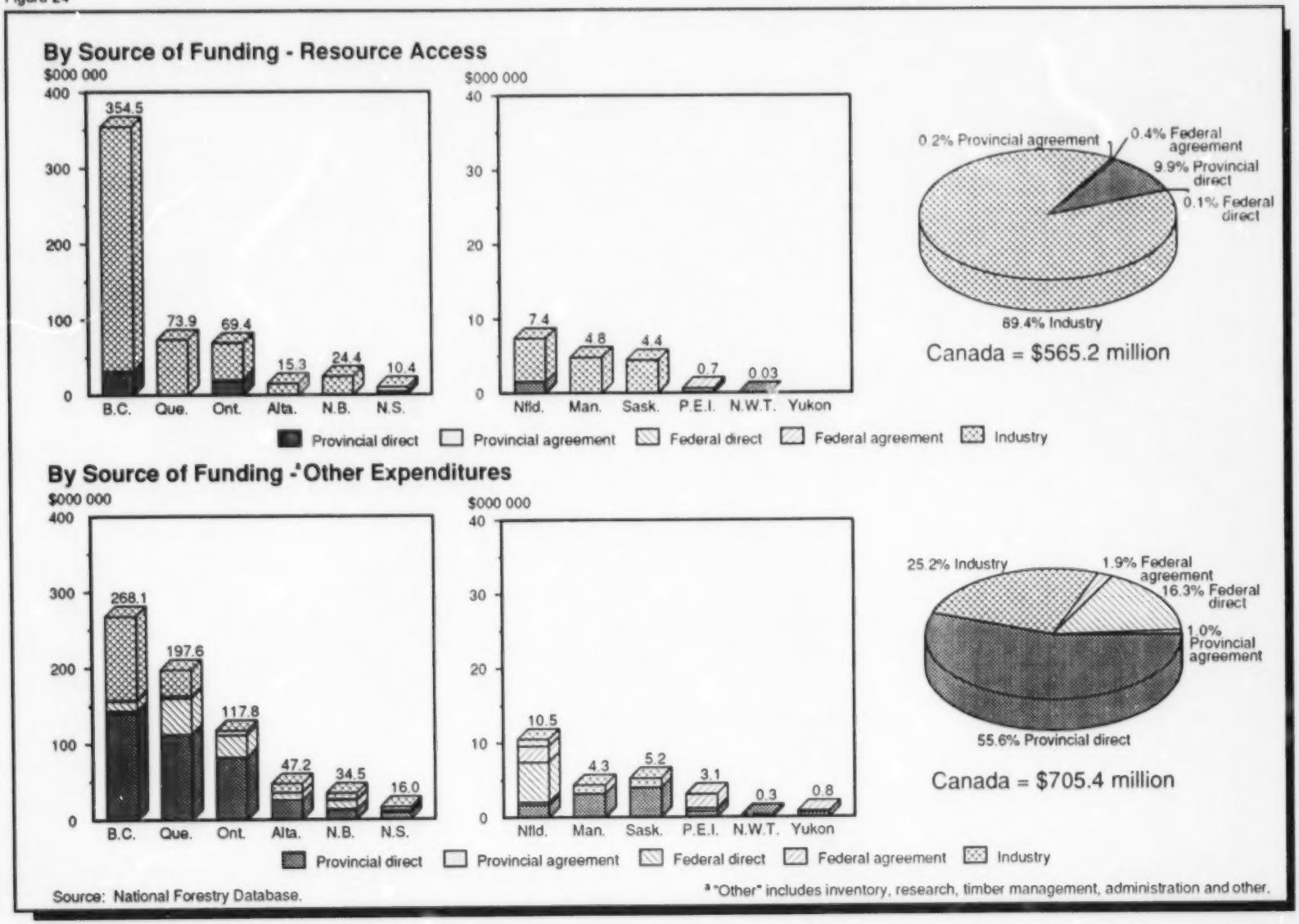
(Thousands of dollars)

Source of funding	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Public - direct														
Provincial funding	1990	992	66	5 250	18 614	42 935	76 644	22 992	32 860	70 341	90 188	12 848	10	**373 740**
Federal funding	1990	-	-	-	-	419	-	-	-	-	-	-	-	**419**
Total funding	1990	992	66	5 250	18 614	43 354	76 644	22 992	32 860	70 341	90 188	12 848	10	**117 380**
B. Public - agreement														
Provincial funding	1990	86	-	7	-	..	-	-	-	-	-	-	-	**93**
Federal funding	1990	391	-	26	..	..	7	-	-	-	-	-	-	**424**
Total funding	1990	477	-	33	-	..	7	-	-	-	-	-	-	**517**
C. Public - direct and agreement														
Provincial funding	1990	1 078	66	5 257	18 614	42 935	76 644	22 992	32 860	70 341	90 188	12 848	10	**373 833**
Federal funding	1990	391	-	26	-	419	7	-	-	-	-	-	-	**843**
Total funding	1990	1 469	66	5 283	18 614	43 354	76 651	22 992	32 860	70 341	90 188	12 848	10	**374 676**
D. Industry - net expenditures	1990	1 976[p]	-	153[p]	987[p]	22 202[p]	1 150[p]	169[p]	-	1 635[p]	11 953[p]	-	-	**40 225[p]**
E. Total - public and industry	1990	3 445[p]	66	5 436[p]	19 601[p]	65 556[p]	77 801[p]	23 161[p]	32 860	71 976[p]	102 141[p]	12 848	10	**414 901[p]**

Source: National Forestry Database.

FOREST MANAGEMENT EXPENDITURES - 1990

Figure 24



Source: National Forestry Database.

[a] "Other" includes inventory, research, timber management, administration and other.

5.6 Resource Access Expenditures on Forest Management by Source of Funding and Province/Territory, 1990

(Thousands of dollars)

Source of funding	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Public - direct														
Provincial funding	1990	1 538	-	2 136	-	..	20 118	-	37	-	31 887	-	28	**55 744**
Federal funding	1990	-	-	-	57	181	351	-	-	-	2[e]	...	...	**591[e]**
Total funding	1990	1 538	-	2 136	57	181	20 469	-	37	-	31 889[e]	-	28	**56 335[e]**
B. Public - agreement														
Provincial funding	1990	19	183	947	183	52	-	-	-	-	-	-	-	**1 384**
Federal funding	1990	47	487	1 526	190	52	-	-	-	-	-	-	-	**2 302**
Total funding	1990	66	670	2 473	372	103	-	-	-	-	-	-	-	**3 684**
C. Public - direct and agreement														
Provincial funding	1990	1 557	183	3 083	183	52	20 118	-	37	-	31 887	-	28	**57 128**
Federal funding	1990	47	487	1 526	247	233	351	-	-	-	2[e]	-	-	**2 893[e]**
Total funding	1990	1 604	670	4 609	429	284	20 469	-	37	-	31 889[e]	-	28	**60 019[e]**
D. Industry - net expenditures	1990	5 795[p]	-	5 756[p]	23 997[p]	73 615[p]	48 929[p]	4 810[p]	4 400[p]	15 255[p]	322 658[p]	-	-	**505 215[p]**
E. Total - public and industry	1990	7 399[p]	670	10 365[p]	24 426[p]	73 899[p]	69 398[p]	4 810[p]	4 437[p]	15 255[p]	354 547[p]	-	28	**565 234[p]**

Source: National Forestry Database.

5.7 Other Expenditures on Forest Management by Source of Funding and Province/Territory, 1990

(Thousands of dollars)

Source of funding	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Public - direct														
Provincial funding	1990	1 669	788	8 686	12 499	111 521	82 613	3 117	3 930	25 401	140 716	724	297	**391 961**
Federal funding	1990	5 367	..	..	11 074	47 693	28 547	..	..	9 905	12 582[e]	...	...	**115 168[e]**
Total funding	1990	7 036	788	8 686	23 573	159 214	111 160	3 117	3 930	35 306	153 298[e]	724	297	**507 129[e]**
B. Public - agreement														
Provincial funding	1990	378	434	1 108	1 075	1 138	-	-	40	-	2 722	8	-	**6 903**
Federal funding	1990	2 119	1 861	1 825	2 255	2 481	124	72	29	75	2 475	72	-	**13 388**
Total funding	1990	2 497	2 295	2 933	3 330	3 619	124	72	69	75	5 197	80	-	**20 291**
C. Public - direct and agreement														
Provincial funding	1990	2 047	1 222	9 794	13 574	112 659	82 613	3 117	3 970	25 401	143 438	732	297	**398 864**
Federal funding	1990	7 486	1 861	1 825	13 329	50 174	28 671	72	29	9 980	15 057[e]	72	-	**128 556[e]**
Total funding	1990	9 533	3 083	11 619	26 903	162 833	111 284	3 189	3 999	35 381	158 495[e]	804	297	**527 420[e]**
D. Industry - net expenditures	1990	964[p]	-	4 377[p]	7 555[p]	34 795[p]	6 467[p]	1 129[p]	1 243[p]	11 823[p]	109 601[p]	-	-	**177 954[p]**
E. Total - public and industry	1990	10 497[p]	3 083	15 996[p]	34 458[p]	197 628[p]	117 751[p]	4 318[p]	5 242[p]	47 204[p]	268 096[e]	804	297	**705 374[e]**

Source: National Forestry Database.

5.8 Public Expenditures on Forest Management by Ownership, Activity, and Province/Territory, 1990

(Thousands of dollars)

Activity	Year	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon	N.W.T.	Canada
A. Provincial Crown land														
Silviculture	1990	1 579	1 290	5 357	13 418	113 658	121 106	3 894	4 192	22 824	170 086	47	140	**457 591**
Protection	1990	992	6	951	..	42 935	76 644	22 992	32 860	70 341	90 188	12 848	10	..
Resource access	1990	1 286	469	1 808	-	103	20 118	-	37	-	31 887	-	28	**55 736**
Other expenses	1990	..	..	..	..	149 446	111 138	3 171	3 957	35 306	158 229	804	297	..
Total	1990	..	..	..	..	306 141	329 006	30 057	41 046	128 472	450 389	13 699	475	..
B. Private land														
Silviculture	1990	..	1 770	11 128	3 699	65 285	501	-	-	-	939	..	..	**83 322**
Protection	1990	..	60	4 332	..	419	-	-	-	-	-	..	..	..
Resource access	1990	318	201	2 776	365	181	-	-	-	-	-	..	..	**3 841**
Other expenditures	1990	..	..	..	..	12 806	43	-	13	-	54	..	..	..
Total	1990	..	..	..	..	78 690	544	-	13	-	993	..	..	..
C. Provincial and private lands														
Silviculture	1990	7 659	3 060	16 485	17 117	178 942	121 607	3 894	4 192	22 824	171 025	47	140	**546 992**
Protection	1990	1 469	66	5 283	18 614	43 354	76 644	22 992	32 860	70 341	90 188	12 848	10	**374 669**
Resource access	1990	1 604	670	4 584	365	284	20 118	-	37	-	31 887	-	28	**59 577**
Other expenditures	1990	9 530	3 083	11 610	26 900	162 252	111 181	3 171	3 970	35 306	158 283	804	297	**526 387**
Total	1990	20 262	6 879	37 962	62 996	384 832	329 550	30 057	41 059	128 472	451 383	13 699	475	**1 507 626**
D. Federal land														
Silviculture	1990	-	-	60	141	318	760	-	60	55	651*	...	...	**2 045***
Protection	1990	-	-	-	-	-	7	-	-	-	-	...	...	**7**
Resource access	1990	-	-	25	64	-	351	-	-	-	2*	...	...	**442***
Other expenditures	1990	3	-	9	3	581	103	18	29	75	212*	...	...	**1 033***
Total	1990	3	-	95	208	899	1 221	18	89	130	864*	...	...	**3 527***
E. Total - all tenures														
Silviculture	1990	7 659	3 060	16 545	17 258	179 260	122 367	3 894	4 252	22 879	171 676*	47	140	**549 037***
Protection	1990	1 469	66	5 283	18 614	43 354	76 651	22 992	32 860	70 341	90 188	12 848	10	**374 676**
Resource access	1990	1 604	670	4 609	429	284	20 469	-	37	-	31 889*	-	28	**60 019***
Other expenditures	1990	9 533	3 083	11 619	26 903	162 833	111 284	3 189	3 999	35 381	158 495*	804	297	**527 420***
Total	1990	20 265	6 879	38 057	63 204	385 731	330 771	30 075	41 148	128 602	452 247*	13 699	475	**1 511 153***

Source: National Forestry Database.

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